

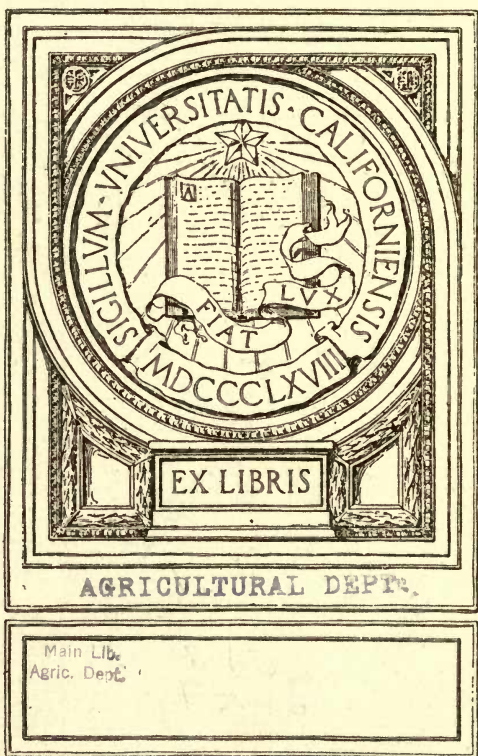
The Backyard Garden

By Edward L. Farrington

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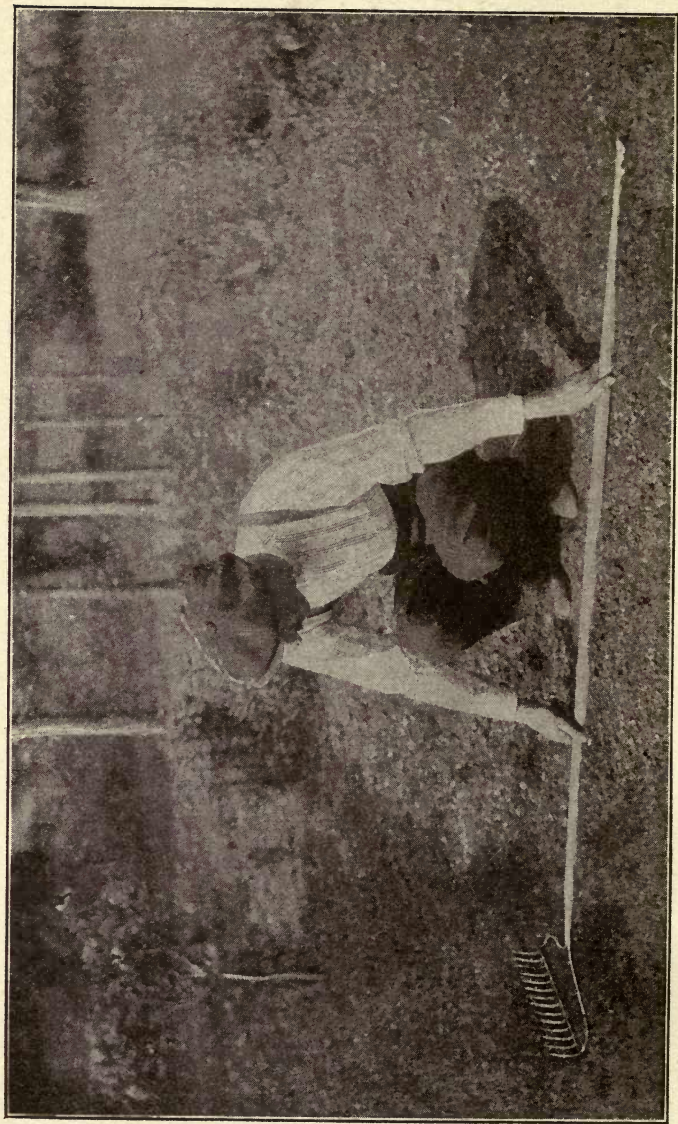
The Backyard Garden

By the Same Author

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(IV)

Making Furrows for Small Seeds

The Backyard Garden



*A Handbook for the Amateur,
the Community and the School.*



By

EDWARD I. FARRINGTON

Author of "The Country Home," etc.



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Foreword



IF MOST garden books were not written over the heads of the average amateur or else lacking in those details which the beginner most needs to know, there would be neither reason nor excuse for this little volume. Without proper guidance, the backyard gardener may waste seed, time, labor and enthusiasm. This is unfortunate, both for the individual and the nation at large, for waste of any sort cuts into the country's resources. Every garden which is a failure results in the loss of potential foodstuffs as well as in the loss of seed. It is the purpose of this book to help smooth the way for the beginner in gardening, pointing out the pitfalls before he stumbles, and thus have a part in filling the nation's market basket.

Many garden-makers will insist upon learning their lessons by experience only, but those who are willing to take advice will find their garden operations simplified and the results more satisfactory if they will accept and profit by the experiences, successes and failures of others as here summarized. The writer is not crossing the bounds of modesty in making this statement, for he is frank to say that he has had the assistance of a great many amateur and commercial vegetable-growers in preparing this handbook. In this connection he desires to express his appreciation of this help, and also to acknowledge his indebtedness to the Boston Globe for allowing him to use some of the material prepared by him for the garden department of that paper.

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Plotting the Home Garden

Planning the Season's Work



BACKYARD garden-making has of late been given an impetus which will last for many years. Of course there have always been little gardens. In making them many thrifty people have found their daily recreation. With the war came the necessity of making gardens in order to help feed the world. Men and women took up gardening as a patriotic duty, but they will continue it because of the pleasure they find in the work and the superior quality of the vegetables which they are able to produce. Thousands of people never knew the real flavor of sweet corn, garden peas and string beans, when at

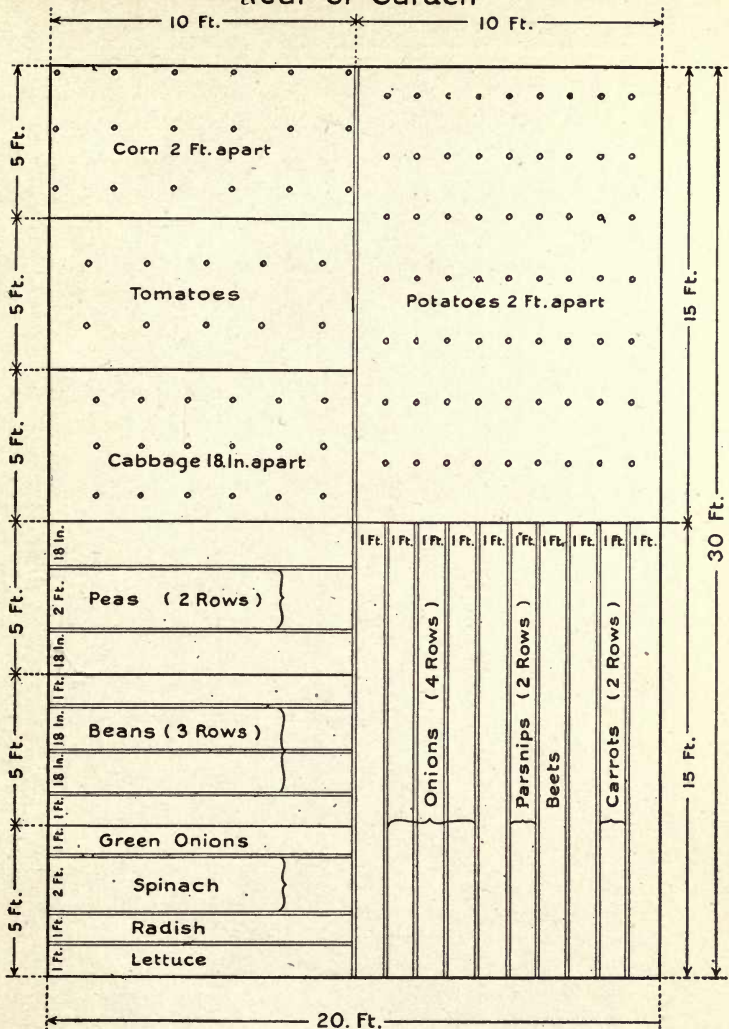
their best, until they began to grow them in their war gardens. Many a commuter has laid aside his napkin with a sigh, after his first meal of Golden Bantam corn had been consumed, and remarked that he had never eaten anything in his life to compare with it. Certain it is that thousands of people who have learned the advantages of a home garden will never be content again to eat the stale and withered produce which comes from the stores.

The first step in the making of a backyard or vacant-lot garden is the drawing of a plan. It is especially necessary that the garden be plotted in such a way that there will be no waste, either of seed or produce. Seeds are scarce, and food must be conserved.

The bulk of the garden area should be devoted to what may be termed the essential crops—that is to say, those which contain the greatest amount of food value. In this list are peas, beans, corn, spinach, beets, carrots, parsnips, turnips, cabbages and tomatoes. It is well to figure out roughly the amount which will be needed of each kind, and to plan accordingly. All the root crops can be stored for winter use, and an extra amount of seed should be planted with that purpose in view. Tomatoes and other vegetables can be canned for winter, so that a surplus will not be wasted.

Such crops as Swiss chard and New Zealand spinach, which can be cropped continuously, will require only a small amount of room. It is a common mistake to plant long rows of vegetables belonging to this class. The amount yielded is then much more than can be utilized. The same statement holds true in regard to lettuce and radishes. These crops should be used as fillers

Rear of Garden



Front of Garden

Suggested Plan for a Backyard Garden

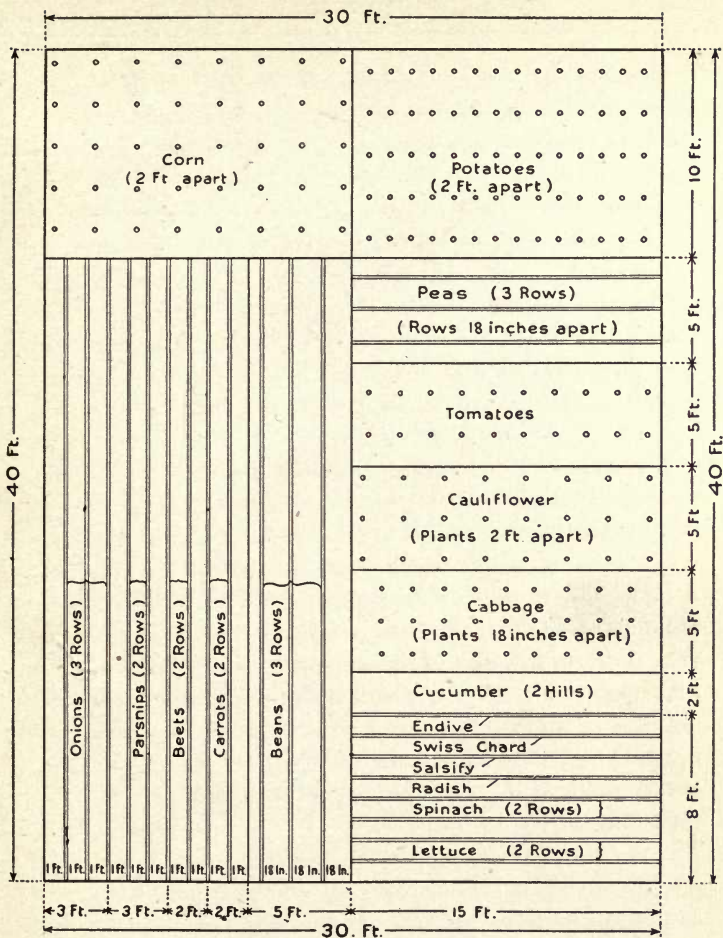
rather than given a large amount of space which could be devoted more profitably to more substantial crops.

Of course the natural tastes of the family must be taken into account. If peas are especially liked, and cabbage is not in favor, the output of the former should be doubled, and of the latter restricted. Whether or not potatoes should be grown, the garden-maker must decide for himself, bearing in mind that they require a large amount of room and often can be purchased for less than they cost to grow. Moreover, there is no particular advantage in having potatoes from one's own garden.

Naturally the backyard gardener has got to take his land as he finds it. It is true a southerly slope and a good sandy loam are most to be desired. But the lack of these advantages should not discourage the garden-maker. Good crops are grown on northerly slopes, while almost any soil can be put in condition to produce high-grade vegetables of some sort. Methods of improving the soil are dealt with in another chapter, and if any special difficulty arises, the State experiment stations will be glad to respond without charge to any appeal for help. A list of experiment stations will be found in the back of this book.

One point, however, must be taken into consideration. It is impossible to grow good crops on land which is shaded most of the day, or in ground which is filled with tree roots. Most of the vegetables must have at least six hours of sunlight if they are to thrive, and an open exposure is a great advantage. If there happens to be a shady corner in the garden, which is reached by sunlight only two or three hours a day, it can be

Rear of Garden



Front of Garden

Suggested Plan for a Vacant-Lot Garden

—Ontario Department of Agriculture

devoted to the leaf crops, like lettuce, Swiss chard, New Zealand spinach, and the like. If there is a piece of the garden which is naturally low and wet in the spring, it can be used for late cabbages and celery.

An excellent plan for the garden-maker is to keep a little account with himself. The result may surprise him, and perhaps check a little tendency to egotism at the end of the first season. At the same time it is likely to prove the actual value in dollars and cents of a well-kept garden. In this account book there should be a debit column for fertilizer, seed, labor, etc., and a credit column in which all the vegetables eaten and canned or evaporated should appear at market prices. To be fair, a one-fifth depreciation on the garden tools should be figured in each year, the assumption being that all tools will give five seasons' wear.

It would be difficult to put too much emphasis upon the necessity of getting to work early. Almost every year the seedsmen are swamped with orders just before planting time. The result is that they are slow in filling these orders, to the exasperation of their customers, and that in the hurry and rush many mistakes are made. Moreover certain kinds of seeds and supplies are likely to be exhausted long before the close of the season. The man who orders early will get what he wants, while his neighbor who orders late will get a substitute or nothing.

It is well to begin actual work in the garden as soon as possible, yet not before the ground can be properly worked. Many a garden has been ruined for years by plowing it before it has dried out, the soil being compacted so hard that only time could make it loose and

friable again. Soil is ready to work when it will just crumble if a handful is squeezed.

It is well for the backyard garden-maker to figure out about how much ground he can care for before he begins his season's work. It is a great mistake to have the garden too large. A small plot well tilled is much better than a big one neglected. A man who cannot count on more than two hours a day should not figure on a garden which measures much more than 50 by 50 feet, although, if his land is in good condition, he may easily be able to care for a plot 50 by 75 feet. No man who is doing a full day's work in a shop or an office can expect to devote more than two hours a day, on the average, to his garden. That will probably mean giving all of his Saturday afternoons to the work, because there will be many mornings or evenings when it will be impossible to work in the garden because of rain or some other reason. Naturally the garden-maker who can have the help of his children or possibly his wife can manage a larger piece of ground.

There are some people who always begin any kind of work without adequate preparation. These are the kind of people who make a failure of backyard gardening. Also they are the kind who waste seed, land and labor. It is important that the backyard gardener make himself reasonably familiar with the operations which he is planning to carry out. He can do that by reading up on the whole subject, and especially on those crops which he expects to grow. The Government has issued many bulletins which can be had for the asking, and similar bulletins are put out by several of the State experiment stations.

The Square-Rod Garden



AS SHOWING how even a very small plot of ground can be made into quite a comprehensive garden a bulletin issued by the University of Minnesota presents the following plan of "a square-rod garden." One hundred and sixty of these make an acre. Very few back yards are so small that they do not afford the necessary room to carry out this plan.

A garden of this size can be made to produce a large amount of food. Thousands of them should be started in the crowded cities and thus add materially to the nation's food supply.

The schools, too, everywhere, should take up this good work. Many have done so already. In Iowa, for example, and in several other States, gardening has been placed on the regular course of study.

The plan is adapted particularly to concerted gardening efforts by the pupils of the public schools. One vacant city block will accommodate several hundred square-rod gardens. A block 300 by 400 feet, for instance, will afford ample space for more than 250 pupils to exercise their individual talents in horticulture, and still leave room for at least five feet of walk between the square-rod plots.

Allotting one of the plots to a pupil and encouraging the boys and girls of our schools to competitive effort will result in a spirit of emulation of untold educational as well as economic value to the country.

To get the best results from a garden of this size the amateur gardener should proceed as follows, after first fertilizing, spading and raking the soil:

Rows 1 and 4—Mix radish and carrot seed together

and sow from twenty-five to thirty seeds to each foot of row as soon as the soil is ready. A trench about one inch deep is opened for the seeds. Use the radishes when large

Row No.

Inches between rows

		12
.... 1....	Radish and carrots followed by tomatoes.....	18
.... 2....	Early peas	12
.... 3....	Early peas	18
.... 4....	Radish and carrots followed by tomatoes.....	18
.... 5....	Early peas	12
.... 6....	Early peas	18
.... 7....	Lettuce followed by tomatoes.....	18
.... 8....	String beans	12
.... 9....	String beans	18
....10....	Spinach followed by tomatoes.....	18
....11....	Early beets	12
....12....	Early beets	12
	16½ feet	

Plan for a Square-Rod Garden

enough so as to give the carrots a chance to grow. About June 1, set out six tomato plants 3 feet apart. A few carrot plants will have to be pulled out where the tomato plants are set.

Rows 2, 3, 5 and 6—Early peas. Sow about fifteen seeds to each foot of row in a furrow about four inches deep. Use an early dwarf variety like the American Wonder. Peas can be sown as soon as the garden is ready.

Row 7—Sow lettuce in a furrow one inch deep and set tomato plants as in the carrot rows.

Rows 8 and 9—Plant string beans in hills 12 inches apart about the middle of May. Cover to the depth of two inches.

Row 10—Sow spinach the same as the lettuce in row 7. Set tomato plants as already described.

Rows 11 and 12—Sow about fifteen beet seeds per foot of row the same as radish and carrot.

If the soil is rich and one is careful when working the garden it is possible to grow spinach between all the rows. The carrots and beets should be used while young, either on the table or canned for winter. The tomatoes are supposed to have all the space when they need it. Considerable space will be saved if the tomato plants are trained to a single stem and fastened to a strong stake.

Getting the Garden Ready



IT IS a waste of time and labor, to say nothing of enthusiasm, to plant a garden which has not been properly prepared. One reason why amateur vegetable gardeners often lose heart and say that they can't make anything grow is just because they will not take the time to make the ground ready for the seed before they start planting.

Merely turning over the earth with the plow and then smoothing it down with a harrow will not suffice. It is actual cultivation which the soil needs, with all clods broken up and all large stones removed. The finer the soil can be made, the better the crops will grow.

In the old country gardens are made ready by the trench system, which is accomplished by this means: First a trench the length of the garden and the depth of a spade is dug; then a second trench is dug in the same way, and the soil thrown into the first; the soil from a third trench is used to fill the second; and so on, across the garden; finally the soil dug out of the first trench is wheeled to the other side to fill the trench dug last. In this way the whole garden is well worked over, and a perfect seedbed is made. This may seem too laborious a process for the backyard gardener in this country, and yet even here it is often the secret of the prize-winning crops, sometimes a secret which is not disclosed to the neighbors. In small gardens the bottom of each trench can be filled with manure.

If the garden-maker happens to have very heavy soil, it can be improved to some extent by working in a considerable quantity of sand or coal ashes. Neither

has any fertilizing value, but they help to make the soil more porous. The only real panacea for poor soils, however, regardless of their nature, is stable manure, which lightens up heavy soils and gives body to those which are light. Manure which is partly rotted is far and away the best for all crops. If wood ashes are available they can be used to advantage where corn, tomatoes and leaf crops are to be grown. If commercial fertilizers must be relied upon alone, as in sections where manure cannot be obtained, they must be supplemented with some such crop as rye or buckwheat, planted late in the season, to be plowed under the next spring. The decaying vegetable matter will provide the humus which is furnished by the coarse material in manure when that is used. Humus, which is decayed vegetable matter of any kind, is absolutely indispensable if good crops are to be grown. Of course the first season new land will probably give satisfactory crops even with commercial fertilizers alone.

If only sod land is available for a garden, the amateur will find himself with some special problems to solve. It is a very difficult matter to get sod land ready for a kitchen garden the first season, unless the sods are removed and the soil shaken out. This plan is wholly feasible in a small backyard. If sods are simply turned over by the plow, the land cannot be worked except with the greatest difficulty. It will be full of airholes, and about the only crops which can be grown will be potatoes and corn. If one happens to get hold of a particularly good plowman, who will turn the sods entirely over, so that the grass will be on the bottom, and will then go over it with a disk harrow, it can be put

into fairly good shape. Such land will usually grow everything except root crops well, provided the season is not too dry. Sod land, however, is pretty certain to be a discouraging proposition for any amateur to tackle, unless the sod can be removed.

It may be said in passing that these sods actually contain a great amount of humus and plant food, and should not be thrown away. If piled up, they will soon disintegrate, and after a year or two may be put back again, when they will greatly improve the garden.

After sods have been turned over and the soil kept cultivated for one season, as will be the case if corn is grown, they will have rotted sufficiently by the next year to make the garden available for all crops.

Indispensable Tools, and Some Others



ONE of the best garden-makers whom it is the writer's privilege to know does practically all of his work with a rake, a spade and a hoe. Even a large garden can be carried on successfully with these three implements. It is not wise, however, to restrict one's self to this trio, because several other tools will go far toward minimizing time and labor. The average backyard amateur has only an hour or two each day for his garden work and must make every moment count. The brief list given might well be supplemented by the following: A wheel hoe with extra attachments, a scuffle hoe, a garden fork, a potato hook, a hand weeder, a good trowel and a garden line. In addition you should have a wheelbarrow if the garden is a large one.

It is true that a wheel hoe is not indispensable, and the man who has a garden of limited space does not need one. This implement, however, makes it possible to go over a vegetable plot much quicker than the work can be done with a hoe, and with less exertion. The various attachments are so arranged that the operator can get under the leaves of the growing plants without cutting off the stems, and can either pulverize the surface of the ground or work it to a considerable depth. The plow attachment is particularly convenient when seeds are to be sown in furrows. The furrows can be opened and the seed covered without any handwork.

Several kinds of wheel hoes are now on the market, but the most satisfactory for the amateur is one with a single wheel having a diameter of two feet. Some of the best makes have smaller wheels, but are wholly satisfactory nevertheless. Many times double-wheel hoes

are recommended, because they can be used astride the rows. There is a slight advantage in this, but on the other hand these implements are harder to handle, and the average amateur will find a single-wheel hoe much more desirable. A good machine can be purchased for \$3.00, while those with numerous attachments cost up to \$8.00. A seed-sowing attachment can be purchased for a few dollars extra, but it is not to be recommended to the man or woman who owns a small backyard garden. It is, of course, a great saver of time and labor when the garden is several hundred feet square.

The scuffle hoe is a popular tool with market gardeners and can be used to advantage in any garden where the soil is rather loose and not stony. A large plot can be gone over quickly with this tool, which can be both pushed and pulled. It makes a very good substitute for a wheel hoe in a garden of limited proportions.

The need of a potato hook may be questioned, as potatoes are likely to be ruled out of a little garden; but the use of this device is not restricted by any means to the digging of potatoes. It is one of the best of tools for cultivating around young and tender vegetables, and far preferable to some of those sold for that purpose.

A trowel is almost indispensable when plants are being set out. It should be a strong and sturdy tool, however, and not of the ten-cent store variety.

Most amateur gardeners have a pride in straight rows. These can be obtained only by the use of a garden line, and the only way to keep the line from getting snarled is to wind it on a suitable reel.

Getting back to the hoe, which cannot be given up, no matter how many more modern tools may be intro-

duced, it is worth while pointing out that the wise garden-maker will choose his hoe with great care. It should be strongly made and balance well in the hands, feeling comfortable when placed in the proper position for work. It should not be too light nor too heavy, and it should have a sharp blade. The only way to do good work with the hoe is to keep it sharp and clean. Practical garden-makers keep a flat file in their pockets when at work and apply this frequently to the hoe edge. If the blade is allowed to become dirty or rusty, earth will adhere to it and increase its weight, a point not to be overlooked. It is true, of course, that filing wears away the blade, and some garden-makers with whom economy is a fetish pound the blades with a heavy hammer on an anvil, instead of filing them. This flattens out the blade without wearing down the edge. A mere touch with the file will then make it a keen cutting instrument.

It is not always realized that a hoe has numerous uses. Furrows are opened easily by using one corner, and the soil can be tamped down with the flat side after the furrows have been covered. An old hoe with the blade filed down to half its width makes an excellent tool for use in the strawberry bed. Sometimes badly worn hoes are cut diamond shape, and then are particularly useful at seed-sowing time.

It is highly important to keep all tools clean and free from rust. It is an excellent plan to keep a few squares of old bagging on hand with which to wipe off the tools after they have been used. When any garden implement is to be laid away for a time, it will not rust if first rubbed over with lard to which a little whitelead has been added, or with common wagon grease. Tools

which have already become rusty may be cleaned if first soaked in sour milk, whey or kerosene for ten or twelve hours, and then rubbed briskly with a rough cloth. An occasional painting will help to preserve the woodwork. In some sections, where the borrowing habit is well established, marking the tools with a stencil so that they can be easily identified is a wise precaution. Some garden-makers also paint a bright-colored band around the handles of their tools, so that they can quickly be found if lost in the grass.

Feeding the Home Garden



VEGETABLES which are to feed the family must first themselves be fed. That opens up a phase of garden-making which puzzles the average amateur more than any other feature of this work. There seems to be something mysterious about commercial fertilizers, and some amateurs refuse to have anything to do with them. This is a mistake, although really there is little need of commercial fertilizers if stable manure can be obtained in abundance. It usually happens that the backyard vegetable-grower who lives in a small city or a town finds it practically impossible to obtain stable manure except at a prohibitive price. There is no reason then why he should not use dried manures and commercial fertilizers from the seedstore. If properly handled they will give most satisfactory results.

Unfortunately war-time conditions have made even commercial fertilizers high in price, and often hard to obtain. For that reason dried manures, liquid manures and the practice of green manuring must be depended upon to a large extent.

Although green manuring is a new term to many people, it is one with which they should become acquainted as soon as possible. Green manures are the salvation of small gardens, and even of the market gardens, when fertilizers become scarce. They take the form of quick-growing crops, like rye, buckwheat, vetch, rape, turnips and crimson clover, which are plowed under before they have matured. In this way humus, which is decayed vegetable matter, is added to the soil, and the latter greatly improved. One of the best ways to make any garden better is to sow rye as soon as the crops are

off, letting it grow through the winter and plowing it under when spring comes.

Probably the amateur can grow good crops in most new land without the use of fertilizers, but the yield will be very much smaller than if they were employed. Of course barnyard manure, when thoroughly well rotted, is the best fertilizer, but it is not so quick to act as some other kinds. If barnyard manure which is thoroughly well rotted, and yet has not been exposed to the weather where it will leach, which means washing away of the liquid, can be obtained at a reasonable price, it should be used by all means. All manure adds humus, which is a point in its favor. It should be put on after the ground has been plowed, and before it is cultivated. If only fresh manure can be obtained, it is best plowed under, being thrown on the garden some time in advance. There is a question whether dried manures and commercial fertilizer are not preferable to fresh manure, in the backyard garden in any event.

Every catalogue lists a great number of special fertilizers. But little attention need be paid them. As a general rule, a good potato fertilizer will be satisfactory for all root crops like beets and turnips; likewise for those grown for their seeds, such as peas and beans. On the other hand vegetables like lettuce, spinach, Swiss chard and cabbage, grown for their leaves, will do better on a high-grade top dressing. Pulverized sheep manure, sold by all seed dealers, is an excellent fertilizer for general garden use. Most of the shredded manures are also good, and they are much easier to handle than fresh manure.

Certain crops, however, seem to do best on stable

manure, and if a wheelbarrow or two can be obtained, it should be used in the hills where cucumbers, pumpkins, squashes and melons are planted. The best way to use fertilizers is to scatter them in the furrows before the seeds are planted, at the rate of about a handful to a yard; but it is very important that the soil be thoroughly mixed with the fertilizer before the seeds are put into the ground. Immense losses are suffered every year simply because this precaution is not followed. The seeds are burned by the fertilizer, and no crop results. The mixing can be done with the hoe, or by tying a couple of horseshoes to the end of a light pole and drawing them up and down the furrows.

Most of the directions for using fertilizers are based on amounts per acre. In reduced terms they are made available for the man with a little garden by the following table:

1 ton per acre equals 50 lb. per 1,000 sq. ft.

1,200 lb. per acre equals 30 lb. per 1,000 sq. ft.

500 lb. per acre equals 12 lb. per 1,000 sq. ft.

Twenty pounds of fertilizer for each thousand square feet of garden space will usually be satisfactory. At that rate a 100-lb. bag will suffice for a plot 100 feet long by 50 feet wide.

Why Lime Is Used, and How



LIME in itself is not a fertilizer, but sometimes it seems to have almost magical results when applied to a backyard garden. It is true that there are some sections where lime is not needed, but most new land, as well as gardens where manure has been used for a long time, are greatly improved by an occasional application. The most important quality which lime possesses is its ability to sweeten sour soil. Most land which has been lying fallow for years is likely to be sour, which means that the average backyard garden which is being plowed up for the first time is very likely to need lime. If sorrel is present, that in itself may be taken as an indication that the land is sour, but in any event it is well to make a simple test.

Almost any agricultural college or experiment station will test the soil of the backyard gardener who sends in a small sample, say a pint or so. They will probably use a process which is not available for the amateur, but the latter can make a fairly satisfactory test himself if he will buy a strip of blue litmus paper at the nearest drugstore. The cost will be only a few cents. If this paper is pressed into the moist earth without being touched by the hands it will begin to turn pink within a few hours if the soil is acid. The degree of acidity can be measured by the extent to which the color of the paper is altered. The same test can be made by inserting a strip of paper in a cupful of the soil brought into the house and moistened. If the paper remains blue, no lime will be needed to sweeten the soil.

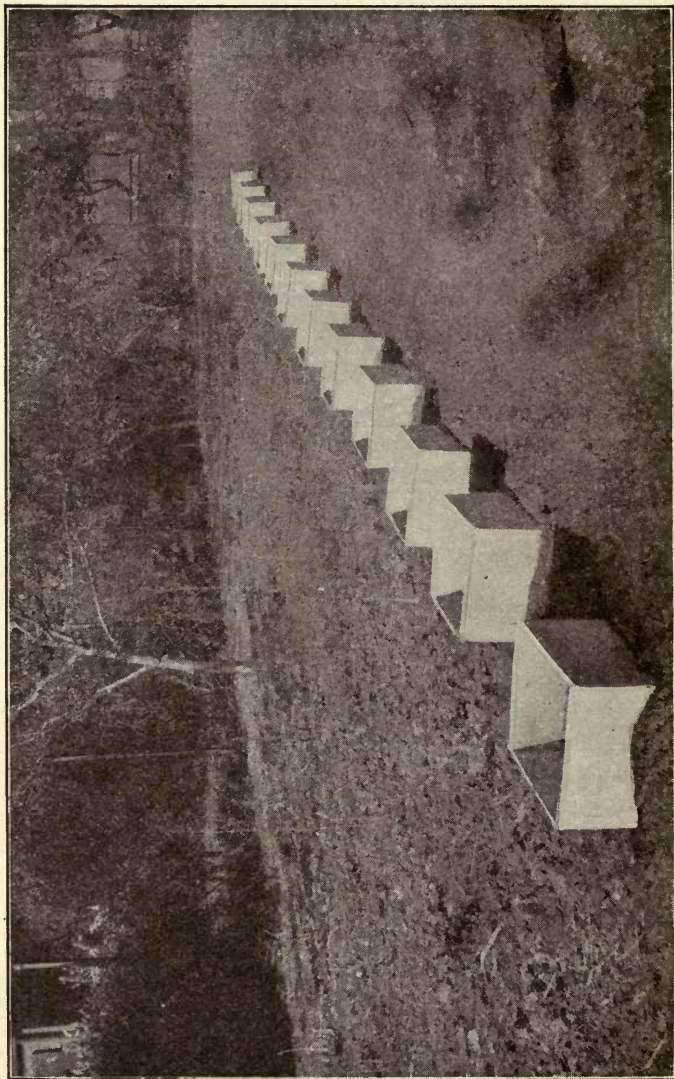
In former years lime was mostly recommended simply to correct soil acidity, but it really serves other valu-

able purposes. It helps to loosen up stiff soils and to make sandy soils more fertile. It is an excellent preventive of clubroot, and should always be used where this trouble has developed on previous crops of cabbages, cauliflower or Brussels sprouts. Lime puts the soil into such a condition that the fertilizing elements which it already contains are made available for use by the plants. It is particularly useful in helping to free the potash in the soil, an important matter now when potash is practically out of the market, being a German product. Highly satisfactory results have been obtained by using lime where potash would ordinarily have been recommended. Lime comes in several different forms, but the safe kind for the backyard vegetable gardener to use is what is known as pulverized limestone. It is sold by most seedsmen, and by many dealers in other products, especially grain dealers and lumbermen. It can be bought in hundred-pound bags in most sections. It is impossible to lay down any absolute rule as to the amount needed, but in a general way it can be said that one pound should be used for each ten square feet. If burnt lime is used, only half the quantity stated is needed. If one is using only a small amount he will be safe in simply applying enough to make the ground white.

Probably the best time to apply the lime is after the land has been plowed or spaded, but before it has been cultivated or raked over. It may be said in passing that the wise amateur will wear his oldest clothes and a pair of gloves when he is spreading lime. The best time to put on the lime is before planting, but there is no reason why it cannot be used between the rows later on.

Perhaps one reservation should be made when advising the free use of lime. It is not usually considered well to spread lime on ground which is to be devoted to potatoes, having a tendency, in the opinion of experts, to increase the danger of scab. Some plants, like rhododendrons and azaleas, have a great aversion to lime, but nearly all vegetables thrive in a garden where it has been used with a generous hand. Lime saves fertilizer, and, being cheap, it should not be overlooked by the backyard garden-maker.

Lime is needed for the new garden, and then about every three years thereafter, as a general rule. It may be used annually to prevent clubroot, as described above.



Boxes to Force Early Crop

Cold Frames and Their Baby Sisters



WHILE the average garden-maker will not bother with a hotbed, he can make good use of a cold frame, which is much easier to handle. A cold frame differs from a hotbed in only one respect: it contains no fresh manure, the sun alone being depended upon for heat. It can be made on the surface of the ground, but it is rather better to have a shallow pit. Hotbed sash is a standard size, 3 by 6 feet. Accordingly a cold frame must be six feet from front to back and any length that is a multiple of three. In the average small garden a single frame will be sufficient. The cold frame should be about fourteen inches high at the back and ten inches in front, allowing a 4-inch slant to shed water and admit a greater amount of sunlight. Of course the slope should be toward the south.

While planks are best for making either a hotbed or cold frame, any common boards will do. The simplest way to construct the frame is to drive stakes at each corner, nailing the boards to them. Banking the boards on the outside with earth or manure will help to exclude the cold. Fill the pit with good garden loam mixed with well rotted manure, if it can be obtained, to within five inches of the top of the front board.

Any time after severe cold weather is over the cold frame can be used to start plants of such vegetables as lettuce, cabbage, leeks, cauliflower, beets and celery. Lettuce and radishes planted early can be allowed to mature in the frame. They will be ready long ahead of an outside crop. If extra early-corn, beans, cucumbers and melons are wanted, seeds can be sated in a frame, but should be sown in paper pots or on inverted sods so that

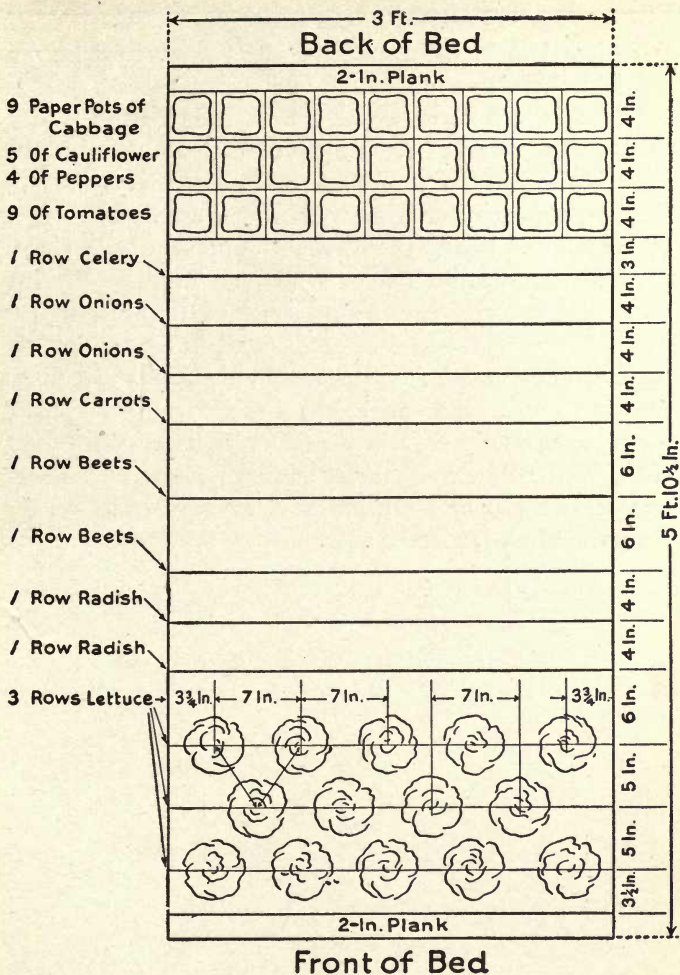


Cold Frame for Early Plants

the roots will not be disturbed when the plants are set in the open ground.

Such vegetables as tomatoes, eggplants and peppers need to be started in the house, as they require more heat than a cold frame offers, but when they are partly grown they can be transferred to a frame. Then they need to be hardened off before they are set in the open ground.

A cold frame can be used for starting many kinds of flower seed in the spring, for growing lettuce in hot weather, and for prolonging the season in the fall. Altogether it is a very useful adjunct to the garden-maker's equipment. Of course no one need buy regular sash if he has double windows or any discarded window sash that he can use. It is even possible to substitute muslin



Plan for the Planting of a Hotbed

—From a Cornell Bulletin

for glass late in the season. Indeed a material known as glass cloth is on the market and costs but little.

To make a hotbed, which can be used earlier than a cold frame, a foot of fresh manure must be placed in the bottom of the frame to provide extra heat.

Any garden-maker who wants to get extra early vegetables without taking the trouble to operate a cold frame can use what has been termed the cold frame's baby sisters. These are simply boxes made of wood or waterproof paper, with panes of glass fitted in the top loosely so that they can be opened for ventilation. Forcing-frames of this kind can be purchased cheaply or made from boxes obtained from the grocery store. With their aid all of the tender vegetables like corn, beans, cucumbers and melons can be sown ten days or two weeks earlier than would otherwise be safe.

Starting Seeds in the House



THE only way to have very early vegetables is to take time by the forelock and start seeds indoors while the ground is yet cold. In the Northern States especially it is important to make an early start, if vegetables like tomatoes, eggplants, cauliflower, early cabbages, celery and peppers are desired. Of course there is some advantage in having a hotbed, but its operation involves too much skill and requires too much attention to make it suitable for use in the backyard garden. Starting seeds in the kitchen is a much simpler matter, and the results are likely to be satisfactory if the started plants can be set in a cold frame later.

Market gardeners use what they call flats, which are merely shallow boxes the right size to be handled easily, and about two inches high. Anyone can make good substitutes for flats by obtaining a few old boxes at the grocery store and cutting them down to the right size. The boxes should be filled with good garden loam, with which a very little sand has been mixed. If no soil is available, a nickel or so will buy all that is needed from the nearest florist.

It is advisable to put the boxes of soil into the oven of the kitchen range until it has become thoroughly heated. This will kill the weed seeds and save much trouble later on. It is not well to bake the soil very long, however.

Some vegetable seeds are very fine and need be only pressed into the earth, a little sand then being sprinkled over them. Furrows for the larger seeds can be made with the point of a pencil, and should be about an inch and a half apart.

Many amateurs have difficulty in watering their seed-boxes after the seed has been planted. One plan is to set the box in a pan of water and let the water soak through from the bottom. A much better plan is to get a piece of tissue paper, just the size of the box, and lay it on the soil. If water is then applied lightly to the paper, it will gradually soak through and the seeds will not be washed away. There will be no need to remove the paper, for it will have become so thoroughly water-soaked by the time the little plants appear that they will easily push their way through.

It is best to keep a light of glass over the box until the seedlings show, the box being set in a warm place like the back of the range. The glass should not fit tightly down, but may be elevated a little at one end. When the seedlings burst through the soil, the glass may be removed and the box set in a sunny window.

As soon as possible the little plants should be thinned so that they will not touch. Then, when they have made their first true leaves, or in some cases even earlier, they should be transplanted to other flats, or, better still, to paper pots which can be set close together in any box.

The principal advantage of using paper pots is that the plants can be set into the ground, when large enough, without disturbing the roots. The paper pots need not be removed, for they will eventually rot away, and while they remain the sides will form a barrier to keep away the cutworms. The little drinking-cups which are found in most railroad cars and in other public places make excellent substitutes for paper pots. It is economy to save these cups, although the price of the paper pots



The Use of Paper Pots

is very low. Some people transplant their seedlings to tomato cans, where they grow thriftily.

If one has a cold frame which can be used through April, tomato plants and pepper plants may be started as early as the first of March indoors. All the other kinds can be started after the fifteenth of March. If kept in the house too long, the plants are apt to become spindling.

They will make better growth in a cold frame which can be opened on warm days.

Of course the man who has only a very small garden will probably buy started plants. Perhaps this is the best plan for the beginner.

When and How to Plant



IT IS impossible, of course, to give arbitrary dates for the planting of seeds. Much depends on the location and the season. Many garden-makers observe the habits of certain trees and use them as guides. It may be considered safe, for example, to plant all the tender vegetables when the maple trees have come into leaf. In the appendix will be found planting tables for both vegetables and flowers which may be followed with a considerable degree of confidence. Seeds should be planted deeper in light than in heavy soil, and those planted late should go in deeper than those planted early.

To sow poor seed is a sheer waste of time and labor. Probably the average backyard garden-maker fails to realize the difference in the quality of the seeds offered by the average corner grocery and those sold by a reliable seed house with a reputation at stake. Some kinds of seed germinate well after being kept several years. Other kinds, on the contrary, are practically worthless the second or third season.

In any event it is a good plan to test the seed if more than a single package is to be sown. This is easily done by placing a few between two strips of blotting-paper and keeping the blotting-paper moist for a few days. At least seventy-five or eighty per cent of the seed should germinate. If the percentage of germination is less it would be foolish to plant the seed. Inasmuch as the long war has made many kinds of seed increasingly scarce and high in price, particular pains should be taken in getting that which is of good quality.

There is much waste from the too early sowing of

certain vegetable seeds. Lettuce, peas, onions, beets, cabbages, spinach and some other vegetables may be planted as soon as the ground can be worked, for the seed will germinate in a temperature of 50 degrees or less. Seeds of tomatoes, peppers, corn, beans, melons and cucumbers, on the other hand, will rot in the ground if planted before warm weather is established.

Moisture has much to do with germination, especially with hard seeds. Soaking of peas and some other seed is often recommended, but it is much better in most cases to wet down the furrows with a watering-can, using warm water for the purpose when convenient. In any event the seed should be sown as quickly as possible after the furrow has been opened, so that the soil will not dry out. Good market gardeners have the man who sows the seed follow closely after the one who opens the furrows, the seed being promptly covered.

Garden-makers sometimes try to sow seed just before a rain, but that is a mistake. If the sun comes out the soil will be baked and germination of the seeds delayed if not prevented. It is wiser to sow immediately after a rain, the crust being broken up and the soil made as fine as possible. The finer the soil particles, the better the germination of the seeds.

It is also important that the seed be brought into close contact with the soil, especially in light ground. A roller may be used on large fields, but in the home garden it is advisable to firm the earth with a board or to use the feet. The roller attached to seed drills does some good, but it is not heavy enough for best results. The feet do better work.

Carrots, beets and the other root crops cannot safely

be sown on land which has been enriched with fresh manure, if clean roots are to be grown. They will do well on ground manured heavily the year before. This means that rotation of crops should be practiced to some extent, even in the home garden. Pulverized sheep manure can be used safely for root crops.

Often there is much waste because seed is sown too thickly. And not only is seed wasted, but the amount of labor required for thinning is greatly increased. Seeds of all the root crops should be sown thinly. This will reduce the amount of thinning and produce stronger plants.

Melons, squashes and cucumbers, however, should be sown rather thickly because of the danger from cutworms. It is often wise to plant corn thickly, too, to allow for losses. When seed is planted in furrows, care must be taken not to have it come in direct contact with fertilizers of any kind. It is very important to mix the fertilizers with the soil in the bottom of the furrows before the seed is sown.

The following method of sowing seed is recommended by a prominent vegetable specialist in Canada:

"To sow a row of seed quickly, evenly and thinly requires care and practice. The top of the seed packet may be torn off, the packet held between the thumb and forefinger. By gently swaying the packet from one side to another the seeds will drop out. Another method of seeding is to place the seed in a tin dish and gather as many seeds as possible between the thumb and forefinger. A gentle rubbing motion of the thumb on the forefinger releases a few seeds at a time. Coarse seeds may be placed individually with the fingers.

“After the garden is made ready for planting, a piece of board or a line may be used to make straight rows. A shallow trench the required depth may be made by using a sharpened piece of lath or the end of the hoe handle. This should be drawn close to the line or board until the trench is deep enough. This trench should not be too deep. A good general rule which applies in many cases is to cover the seeds with no more than a quarter of an inch of soil. After the seeds have been dropped they should be covered with soil of the required thickness and the soil over the row firmed with the foot, a piece of board or the back of the spade.”

Cultivation and Water



IT MAY seem strange that cultivation and watering of the vegetable garden should be classed together. There is a good reason for coupling them, however, because to a large extent they serve the same purpose. There is an old adage which says that a good hoeing is worth as much as a shower. Sometimes that is true. A light shower merely packs the soil and increases evaporation, which means simply the escape of moisture from the ground. Even a hard rain will do little good if most of the water runs off. If the garden is kept well hoed, and the cultivator is used as soon after a rain as the ground will permit, the water which falls will permeate deeply, and will then be locked into the soil. This means that the crops will get all the benefit.

Everybody knows that the oil in a lamp rises through the wick by reason of what is termed capillary action. The moisture rises through the soil in exactly the same way when the surface is packed hard, then being evaporated and lost in the air. When the surface of the soil is kept loose, this escape of the moisture is greatly retarded. It follows, therefore, that the most important time of all for cultivating the garden is as soon after a rain as the ground can be worked. It must not be hoed when sticky, but prompt cultivation will help to hold the water which has entered the ground.

It is also very important to cultivate frequently during a dry season, for the sun bakes the earth unless it is kept constantly stirred. A good hoeing in midsummer is often worth almost as much as a shower.

Too many beginners think that the only purpose of cultivation is to keep down the weeds. Now, weeds are

bad, of course. John Burroughs says that they are the tramps of the garden. At any rate they are the thieves of the garden, for they steal moisture and plant-food which belongs to the growing crops. Nevertheless cultivation would be necessary even if there were no weeds. It keeps the water in the soil, as has been described. It allows the air to enter, which is also necessary, yet it keeps the soil pulverized, so that no air-pockets will be formed, and makes much more plant-food available than when the soil is left in lumps. "Tickle the ground with the hoe," runs an old saw, "and you will make it laugh with the harvest." That is another way of saying that cultivation is one secret of growing good crops.

Of course it isn't necessary to use a hand hoe all the time. If the garden is a large one, a wheel hoe is almost a necessity, although much labor can be saved with a scuffle hoe if the soil is not heavy and full of stones.

Once a week is none too often to cultivate the garden all the season through, and the most successful gardeners will probably hoe the crops twice as often. The oftener this work is done the easier it becomes, for it is not at all hard to cultivate soil which is in good tilth, while ground which has become baked by the sun or packed by the rain is difficult to loosen up.

Cultivation, therefore, should be set down as one of the indispensable items of garden work, even though it may not sound quite so attractive as planting the seeds or harvesting the crops.

Many garden-makers have to depend wholly upon rainfall for the water which their garden gets, and cul-

tivation must be relied upon then to take the place of water when the rainfall is light. If artificial irrigation is practiced, however, it will be found of great benefit. An abundance of water helps to increase the earliness of the crops, among other things, and gives them an improved flavor. But merely sprinkling the garden with the hose is not irrigation in the proper sense, or good policy either. It serves to pack the surface of the earth, but does not penetrate the soil, and therefore does more harm than good. Water to be really beneficial must be applied in one place until it soaks through the soil several inches. Hence a mere surface sprinkling helps to attract the roots to the surface, where they are burned by the sun, instead of encouraging them to burrow deeply as they should. One expert has said rather pertinently that a good hoe is better than a hose.

There will be but little loss of water if furrows are made with the hoe along the sides of the growing plants and the water allowed to run through them. This is a good plan to follow when there is a water meter in the house.

Watering the growing plants, however, is not the only point to be kept in mind. Much can be done to insure success at transplanting time by thoroughly soaking the ground before the plants are put in. This is especially true when setting out celery. If the soil be wet several inches deep and then allowed to dry out on the surface, a reserve of moisture will be created which will serve the young plants for some time. The same plan can be followed most advantageously when sowing seed in hot weather.

Sometimes it happens that there is too much water in the garden, and of course that condition is one which is not to be remedied by cultivation. A wet garden will not grow good crops. There are few gardens, however, which cannot be drained in some way or other in order to give satisfactory results.

The simplest and least expensive plan is to make ditches at intervals of about twenty feet, deep enough so that the water level in the whole plot will be brought down at least a foot, and preferably more, below the surface. The writer knows of one garden in a low spot which is surrounded and intersected by ditches two feet deep or more. If it were not for them the land would be in water most of the time, and yet the raised beds between the ditches grow excellent crops now. Often less extensive draining will be sufficient.

The drains or ditches must incline a little, of course, and must have some sort of outlet, even though it be only a blind well, which is a deep hole filled with stones. If one can afford to put tiled drains in his garden, he will find that by all means the best plan. Tile draining will make almost any back yard available for a garden. As the tiles are covered, they do not encroach on the garden area, and it is only necessary to see that they do not become clogged at the mouth.

Witch Grass and Weeds



IF ALLOWED to "gang its ain gait," as the Scotch say, witch grass, known also as twich grass, quack grass and by other names, will rob any garden-maker of all the enthusiasm he may possess. Indeed, many a garden has been abandoned because of the presence of this pestiferous weed. Yet it may be eliminated from any garden plot if taken in hand early enough and repeatedly uprooted. If the leaves are kept cut off the roots will starve, but in order to keep them cut off it will be necessary to go over the garden with a cultivator or a hoe at least twice a week. One morning a week will not suffice, as the blades will make sufficient growth between times to keep the roots alive, and as long as they are alive they are continually spreading. If this warfare is waged until the middle of summer, no great difficulty is found in keeping witch grass in control.

Much, indeed, depends upon early cultivation in fighting all weeds. If cultivation is started just as soon as the appearance of the seedlings makes this possible, the work will not be hard. It is only when weeds get ahead of the gardener that difficulty is found.

It always pays when sowing seeds like those of parsnips and parsley, which germinate slowly, to scatter a few radish seeds in the rows, as they will come up quickly and permit the gardener to begin cultivating before the other seedlings appear.

The danger from weeds may be appreciated from the Government report showing that a normal yield of 60 bushels of corn may be reduced to 20 bushels if the weeds are not kept down by cultivation.

Weeds not only smother young plants, but rob the

roots of moisture and fertilizer which rightfully belongs to them. Moreover, they harbor fungi and insect pests. There is only a single credit mark which can be given to weeds. They make it necessary for the gardener to keep the soil cultivated, thereby furthering the growth of his crops.

If the garden-maker is very busy, and especially if the season be dry, it is sometimes possible to reduce the amount of cultivation required, and at the same time smother out the weeds by using a mulch of lawn clippings, hay or strawy manure. If a litter of this sort is piled around the plants, it will keep the moisture in the ground and prevent the weeds from coming up. This plan is often followed to advantage with bush fruits like currants, gooseberries and raspberries.

Pulling weeds is a tedious operation, but it must be done. No doubt many people will find it a new experience to get down on their hands and knees and extract witch grass, pussley and pigweed from the rows of beets, parsnips, carrots and onions, but this work cannot be done in any other way. Nor is it really a difficult task, if not delayed too long. Many of the garden crops can be kept clean with the use of a cultivator and hoe, but it is not easy to get close enough to the slow-growing crops to get out the weeds without uprooting the tender seedlings. Then hand-weeding becomes necessary.

It is a good plan to combine thinning with weeding, as it is a simple matter to take out surplus plants if they are large enough when one is working along the rows. Thinning is an imperative operation when seeds have been planted thickly.

Waging War on the Bugs



MOST commercial vegetable-growers are equipped with a veritable bug arsenal, but the amateur gardener can often get just as satisfactory results by the use of very simple remedies.

Cutworms, which often destroy many melon, squash and cucumber plants, can be kept away to a large extent by throwing a handful of wood ashes into the hill when the seeds are planted. The wood ashes will also save the plants from stem-borers.

Tobacco dust may be used in the same way, and if dusted around the plants and on the leaves will save them from the striped beetle, unless this pest is present in great numbers. The grubs of this beetle feed on the roots and cause the plant to wilt. Tobacco dust worked into the soil is one remedy; another is a strong tobacco solution poured around the stems.

Lime with which a little kerosene has been mixed is sometimes preferred to tobacco dust for protection against the striped beetle as well as the black fly. The surest protection is given by setting an open box over each plant, the top of the box being covered with a square of mosquito netting. I use in my garden plant-forcers made of waterproofed paper and simply substitute the netting when the glass is removed. The striped beetle works with great rapidity on young plants and may ruin them in twenty-four hours.

Melons and similar vines are sometimes attacked by lice in great numbers. Many growers bury a plant as soon as they find lice on it. Others spray with a nicotine preparation, but care must be taken to have the liquid reach the under part of the leaves.

The easiest way to protect tomato plants against cutworms is to set paper collars around them. I start the seeds in dirt bands or paper pots which are not removed when the plants are set in the open ground. Tobacco dust scattered around the plants also helps.

Onion maggots come from small flies which lay their eggs at the base of the plants. Sand soaked in kerosene, a cupful of the latter to a pail of sand, is an efficient remedy, the sand being placed as close as possible to the stem. If the white flies are too numerous it may be necessary to start the onion plants under glass; then, by the time the plants are set out, they will be too tough to be troubled. A plan which some gardeners have found successful is to use white arsenic to which a little molasses has been added, the proportion being two ounces of white arsenic to a quart of hot water, with enough molasses added to thicken the mixture somewhat. This is applied by dipping a stick into the mixture and throwing the poison on the plants, where it forms little globules. The molasses attracts the flies, which are poisoned. It has also been found in practice that less damage is done if water is not used at all about the time the flies are due.

The one effective remedy for the corn earworm, which caused great loss in some sections last season, is powdered arsenate of lead dusted upon the silk, on which the caterpillar first begins to feed. The best way to use this poison in powder form is by means of a blowgun, which can be employed in spraying with dry Bordeaux mixture and dry sulphur, which are valuable fungicides. In my own garden dry or dust sprays are used almost wholly, being much more convenient than liquid preparations.

Amateur asparagus-growers often suffer from the

ravages of the asparagus beetle. Naturally they are afraid to spray with a poison, for the beetle appears during cutting-time. A very simple remedy is fresh, air-slacked lime dusted on the plants while they are wet with dew. This destroys the grubs. If the grubs are brushed from the plants in hot weather they will soon die.

White hellebore applied freely is quite effective in controlling the cabbage worm, although large growers usually depend upon arsenate of lead when the plants are small. Pyrethrum, tobacco dust, or even road dust, sprinkled into the plants, will help drive the pests away. The hellebore may be used dry, perhaps mixed with a little flour, or at the rate of an ounce to three gallons of water.

One experienced gardener says that he has found a sure way of protecting his cabbages from worms. He takes the leaf of a tomato plant and crushes it in his hand, after which he lays it on the cabbage head. The writer cannot vouch for the success of this plan, but it is an easy one to experiment with.

Young pea vines are often damaged by sparrows, which are said to be seeking lice. A liberal use of tobacco dust will keep the birds away. Another plan is to cover the plants with cloth fly-screening. This fly-screening is really very convenient. It may be spread over the strawberry bed to save the berries from the robins, and later over the currants to keep the birds from devouring them.

In some sections much loss of sweet-corn seed is occasioned by the attacks of crows and blackbirds. The best way to save the seed from these marauders is to treat it with coal tar, according to the following directions issued by the Department of Agriculture: Mix the tar

with a quart of boiling water. After the mixture has cooled somewhat, but while it is still hot, stir in the corn until every grain is coated, and then spread it out to dry before planting. Corn may be immersed several minutes in moderately hot water without affecting germination.

If cutworms are very numerous, it may be necessary to use poisoned bait to get rid of them. This can be made by mixing a little bran and Paris green, adding enough cheap molasses to make a stiff dough, and a few pieces of finely chopped orange or lemon. This mixture, made into lumps and scattered along the rows, will result in the elimination of the cutworm pest. Of course this bait is deadly poison to humans and to animals. It may be scattered at night and gathered again in the morning, or else buried just under the ground.

It sometimes happens that mice do much damage to vegetable seeds started in frames. Sometimes they can be caught in traps, but probably the most effective remedy is a little white arsenic mixed with toasted corn flakes which have been slightly moistened. This bait seems to attract the rodents, and of course all that eat it will quickly die.

There are many different types of bugs which invade the kitchen garden. As it happens, they are naturally divided into two distinct classes on the basis of their feeding habits. One kind has powerful jaws, with which it eats holes through the leaves. The bugs which belong to this class include potato bugs; various beetles, cabbage worms, and similar pests. They are comparatively easy to deal with, because they succumb readily to doses of poison.

The other class of garden pests do not chew their food, but suck it through a tube, as it were, from the veins in the plants. That is to say, they live on the juices which are extracted by puncturing the leaves. Perhaps the most iniquitous members of this class are the plant lice, (aphides), which often appear in enormous numbers, and yet are so small that they may be overlooked for a long time. There are green lice, white lice, red lice and black lice, all equally bad.

Another well-known sucking insect is the squash bug. Being such a large creature, the average amateur expects the squash bug to be classed among the chewers, and consequently tries to kill it with a poison, without, of course, much success, although sometimes squash bugs do get enough arsenate of lead in some way to destroy them.

The proper remedy for all sucking pests is a liquid or powder which will stop the pores and smother them to death. This may be tobacco dust, liquid nicotine, kerosene emulsion or a soap preparation. Tobacco dust is often relied upon because it is easy to use, but experience has shown that a nicotine extract, sold under some such name as Black Leaf 40, or Aphine, is by all means the most reliable ammunition to use in waging war on plant lice. It is well to remember, though, that the sucking insects are not killed unless the application, whatever it may be, actually touches them.

With the exception of plant lice, or aphides, all the garden pests can be kept in subjection by the use of dry sprays applied with a blowgun or a coffee can with a few holes punched in the bottom. Dry arsenate of lead, dry Bordeaux mixture, powdered sulphur and powdered

tobacco dust are remarkably effective, and much easier to handle than wet sprays. Nevertheless many amateur garden-makers prefer to use the old-fashioned remedies, and sometimes get better results with them. A tin gun for applying liquid sprays can be purchased for less than a dollar.

In addition to bugs and worms, the garden crops may suffer from attacks of mildew and other fungus troubles. It is almost impossible to accomplish much after a fungus disease has become established, but if taken when it first appears, it may often be kept in check by the use of Bordeaux mixture or powdered sulphur. Almost all of the remedies needed can be obtained ready for use at the seedstores. These include a combination of arsenate of lead and Bordeaux mixture, which is especially convenient when spraying potatoes and some other crops.

Success in Transplanting



THE average gardener overlooks the fact that he can increase his yield with but little effort if he transplants freely. There are almost certain to be in some of the rows vacant spaces which can be filled in by using small plants from rows that are overcrowded. This may interfere somewhat with the neat appearance of the garden, but it will be a matter of real efficiency in garden-making. In times like these, when every inch of ground should be utilized, it pays to study the possibilities which the small garden offers.

Sometimes turnips, kohlrabi, Chinese cabbages and other vegetables will grow faster when they have been transplanted than when left in the original rows. Others will not recover in time to mature quite as early as those which were not disturbed. But this will be an advantage, for they will come along after the other crop is past, and thus prolong the season.

In all the work of transplanting it is important to remember that success will not be won if the roots are allowed to dry out. If the ground around them is thoroughly soaked before they are moved, the plants will usually receive but little check. It may be that the earth will not stick to the roots when they are lifted, in which case they may be dipped into an artificial mud puddle. Then the mud will coat over the roots and protect them.

It is always well, when transplanting, to set the plants a little deeper than they stood before. Cabbages, for instance, should be set in the ground to their first leaves. Unless the plants are very small it will be well to trim off the upper half of each leaf. This applies particularly to cabbages, cauliflowers, Brussels sprouts, celery and

similar plants. No cutting of the leaves should be done in the case of tomato plants. A pair of old shears can be used, and the work done easily. The advantage in this shearing of the leaves lies in the fact that excessive evaporation is checked and the roots are given a chance to establish themselves quickly.

It is important to shade plants that are set out in hot weather until they become established, unless one can take advantage of a cloudy or rainy day. Old peach baskets will serve, and even newspapers can be used, if the wind is not blowing. Some people set up boards on their sides when the plants are small. Shingles placed in the form of a tent answer very well, three of them being used, one on the west, one on the east, and one on the south side, and not quite touching at the top. They will need no attention at night, but it is better to remove the peach baskets and similar covering after the sun goes down, so that the plants will get the benefit of the dew and of whatever passing showers may fall.

It is particularly necessary to shade lettuce plants after they have been transplanted. Lettuce is especially useful for filling in vacant spaces. In fact, it is hardly necessary to plant lettuce in permanent rows at all. If started in a seedbed, and the little plants used here and there wherever they can be tucked in, there will be a constant supply without any special portion of the garden being given over to this crop. Lettuce will always head up better after being transplanted.

Plenty of water must be used in transplanting lettuce, and it is always a good plan to use as much water as can be conveniently obtained for all plants. At the same time soaking the soil before the plants are lifted is much

more important than applying water after they have been set out in their new location.

Leeks, as well as celery plants, require transplanting for best results. Leeks are eaten like onions, but are milder. They need to be transplanted when about six inches high, and set rather deeply so that the lower part will be blanched by the earth.

It is of special importance to thoroughly firm the earth around all plants that have been transplanted. If there are any air pockets around the roots the plants will not become established quickly and may die, but if the earth is brought into close contact with the roots new rootlets will be immediately sent out. The simplest plan is to press the earth down hard with the foot.

Supporting Crops that Climb



IF CLIMBING or training plants are to be grown in the garden, they should be supported in such a way that they will take as little room as possible.

This applies even to tomatoes, for when tomatoes are allowed to sprawl all over the ground in the fashion followed by market gardeners, they must be set not closer than three by four feet, while if they are trained to stakes they can be set as closely together as two feet, with three feet between the rows.

A little more room is required when fan-shaped supports or stakes with arms are used, but this plan is really the most desirable, because it makes it possible for the grower to allow three stems to each plant. The yield is then considerably greater than when a single stem is used, although the fruit may not be quite so large.

A very good plan is to make a tent-shaped support of laths and to set the plants two feet apart on each side, allowing them to grow over the support. Even holding up the vines by barrel hoops nailed to four stakes is better than to let them lie on the ground.

An easy way to train cucumbers is to grow them on chicken wire arranged in tent fashion, with the apex about three feet above the ground. If a two-inch mesh is used the expense is small, and the cucumbers will grow down inside the tent, where they are easily picked.

A very good way to train peas, when brush is not available, is to place two stakes at each end of the rows, about eight inches apart, and to run heavy cord down each side, supported by intermediate stakes if necessary. The vines will grow nicely on these strings. It is an even better plan to train the peas on an old fish-netting

when it can be obtained. Sometimes secondhand netting can be found at moderate price, and it is exceedingly useful in the garden.

It is not necessary to have poles even for pole beans, although good, stout poles usually give the most satisfaction. Fairly good results can be obtained by running a wire from the top of stout stakes driven in the ground, one at each end of the row, strings being dropped from the wire to the ground, where they are held in place by pegs. A similar method is sometimes followed in training cucumber plants.

In sections where high winds are frequent, poles set in the usual way are likely to be blown over. This calamity can be avoided by arranging four poles in such a way as to make a sort of wigwam, fastening them with stout cords at the top. The beans may then be planted at the foot of each pole.

It is advisable in any case to set the pole before the beans are planted, as the roots are badly injured if this work is delayed until the plants come up. A crowbar will make so deep a hole that the poles may be firmly imbedded.

When poles are scarce two sticks about two feet long may be fastened to the top of a piece of joist, the sticks extending in opposite directions. Then a stout cord or wire may be run from the end of each stick to the ground, being fastened there with a peg. This allows for the growing of four vines to each post. If deemed advisable, a third top piece may be nailed to the joist and two other strings dropped from that.

Companion and Succession Crops



GARDEN efficiency doesn't mean simply keeping the garden neat and clean or growing big crops. It means keeping all the garden space occupied all the time throughout the summer. It is sheer waste to let any part of the ground lie idle for even a day. It is for this reason that so much is heard about companion and succession crops.

Many amateurs find themselves confused by these terms. Companion cropping is a favorite device of market gardeners, but can be adopted to only a limited extent in the home garden unless the owner happens to be an expert.

Many of the slow-growing plants, like cabbages and cauliflowers, occupy but a small amount of ground at first, although they cover much space when mature. For that reason it is a simple matter to grow a row of lettuce, early beets, radishes or turnips between them. This is one illustration of what companion crops means.

It is an old-time plan to grow pumpkins among the corn, and there is no reason why the amateur should not adopt this practice if he has a fairly good-sized corn patch. Squashes and running vegetable marrows can be grown in the same way.

One plan which meets with a fair degree of success is to sow a few climbing beans in the hills of corn after the cornstalks are a foot or two high. The corn will offer a support for the beans, and no poles will be needed. This is not a good practice to follow when growing a dwarf corn like Golden Bantam, but it works well with Stowell's Evergreen or Country Gentleman.

The plan of mixing radish and lettuce seed thinly with

the seed of vegetables which are slow to germinate has been mentioned in another chapter. This is an ideal form of companion cropping, for the lettuce and radishes mark the rows for cultivation before the other plants come up. The slow-growing plants adapted to this combination include parsnips, parsley, carrots and dandelions.

To whatever extent companion cropping may be adopted by the backyard garden-maker, the possibilities of succession cropping should not be overlooked. Many of the early vegetables are out of the way by the end of June, leaving plenty of time to mature crops of other kinds. It is almost a crime, in days like these, to let a single row of garden space loaf for half a summer.

In a general way it may be said that the root crops should follow the leaf crops, and vice versa. The former class of plants send their roots deeply into the ground, while the latter feed on the surface. This constitutes what is called "rotation of crops," but there is no need of making rotation a fetish. In a good garden there should be enough fertilizer to make possible the growing of the same crop twice in the same place, although when that is done there is always some danger of an increase in fungus troubles.

The following may be taken as an example of what can be done by succession cropping:

Early peas followed by late beets.

Early beans followed by summer turnips.

Onion sets followed by tomatoes.

Early lettuce followed by celery.

Early carrots or radishes followed by cabbages.

Of course the practice of sowing the same vegetable at intervals of ten days or two weeks in order to make a long succession will help in this plan of succession cropping.

There are some vegetables which make a very quick growth and can be used as fillers most of the season. The early turnip is especially valuable. Kohlrabi is another quick-growing vegetable, and it can go in up to the first of August. Chinese cabbage does well planted as late as early in July. Then in September or later spinach and corn salad can be planted for wintering over.

It is an interesting occupation for a winter evening to figure out possibilities in the way of companion and succession croppings which will help to provide a maximum amount of food from a limited space of ground. An efficiency garden requires considerable study and planning, but if done in the right spirit it is as much fun as taking a hand at whist, and much more profitable.

The following table may be helpful in forming combinations:

CROPS OCCUPYING THE GROUND ALL SEASON

Asparagus	Squash
Rhubarb	Pumpkins
Beans, pole snap	Tomatoes
Beans, pole Lima	Eggplant
Swiss chard	Peppers
New Zealand Spinach	Onions (from seeds)
Parsnips	Leeks
Salsify	Okra
Corn, late	Potatoes, main crop
Cucumbers	Rutabagas
Melons	

SUCCESSIVE CROPS TO BE PLANTED AT TEN-DAY
INTERVALS

Radish	Kohlrabi
Spinach	Chervil
Lettuce	Beets, early
Peas	Turnips, early
Beans, dwarf	Carrots, early
Parsley	Corn, early
Turnips	

LATE CROPS TO FOLLOW OTHERS

Beets, late	Cauliflower
Spinach	Kale
Peas, late	Endive
Celery	Flat turnips
Cabbage, late	Chinese cabbage
Brussels sprouts	

Three Permanent Crops



IT IS one of the merits of asparagus that it will grow in almost any kind of soil. Of course it has preferences, doing particularly well in a sandy loam, yet no garden-maker need hesitate about planting this most desirable vegetable.

It is possible to buy one- or two-year-old plants, but experiments seem to show that the one-year-old plants will give a crop just as early as those which are two years old when set out. It is important, however, to set out only strong, husky plants. Weak plants will never be satisfactory. It is also necessary to have the ground plowed deeply and well enriched, preferably with well rotted manure.

It is often recommended that a deep layer of manure be placed under the roots, but the fact is that the roots extend sidewise, rather than downward, so that it is of more importance to have the soil on each side of the rows well fertilized. Plant-food can be added from year to year as the roots develop.

It is best to have the rows about three feet apart in the home garden, and it is desirable when conditions are right to have them run north and south, in order that they may get all the sun possible. It is safe to set the plants as close as one foot apart in the rows, and with the crowns about eight inches underground, the roots being covered only three inches at first, additional soil being added as the plants grow, until the trench is filled.

There is one disadvantage, of course, when asparagus is started, in the fact that a crop cannot be obtained the same season. Usually a little cutting can be done

the second year from root planting. Even with an old asparagus bed, however, cutting should not be continued much after the end of June. Late in summer the bed should be given a good coating of manure, the latter being worked in the next spring.

Sometimes the tops are cut in the fall to prevent seeding. This is a good plan in the South, but many New England growers consider it better to let them remain until late winter, as they hold the snow. In the spring it is always advisable to use a little commercial fertilizer. Salt is often recommended, but its efficacy is questionable. At any rate, it is not really needed.

There are several varieties of asparagus, but by all odds the best is Reading Giant, which has been developed at the Concord, Massachusetts, experiment station. The special value of this variety lies in the fact that it is practically rust-proof. Argenteuil is better known.

Six or eight rhubarb plants will be enough for the average family after they become well established. It is possible to buy clumps at the seedstores, but usually they can be obtained for little or nothing from one of the neighbors. Rhubarb plants which have become old are improved by being divided. It is a simple matter to dig them up, cut them into several good-sized pieces with a sharp spade, and plant them again so that the crowns will be just under the surface. Rhubarb plants should stand about four feet apart, and not be near trees, which will rob them of the moisture which they need.

One point must be borne in mind by the garden-maker. It is impossible to grow rhubarb satisfactorily unless the ground is made very rich. Possibly commercial fertilizers help, but rhubarb revels in manure.

Even fresh manure can be used if it is covered so that the roots do not come directly in contact with it. It is wise at planting-time to dig out a considerable space and throw in two or three shovelful of manure before the crowns are planted. The feeding of rhubarb must be kept up from year to year, too, if good-sized stalks are to be grown. There is no better plan than to heap manure around the plants in the fall and to dig it in when spring comes.

If extra early rhubarb is desired in the spring it can be obtained by setting a barrel or box over a plant and throwing manure around it. This will encourage good growth, and if the top is covered the stalks will be blanched. Some garden-makers keep a supply of half barrels on hand just for this purpose.

Whenever the rhubarb plants begin to run out they should be divided and replanted. The work can be done in the spring or in the fall, without much difference as to results.

Newspapers occasionally publish an item to the effect that rhubarb leaves make a good salad. This is a great mistake, for rhubarb leaves contain a poisonous substance which makes them totally unfit for food. The blossom, however, may be eaten if cut just before the film or tissue which enfolds it breaks. If boiled it makes a dish which is rather bitter, to be sure, but which some people find palatable.

Although horseradish is not by any means an indispensable vegetable, many people like to have a few plants somewhere in the garden. Very often it is grown along the fence rows, but better results are obtained if it is given a little cultivation.

Horseradish likes ground which has been made rich by well rotted manure, but also responds to applications of bonemeal or balanced garden fertilizer. The plants will go on indefinitely, but to have them of the best quality it is well to replant frequently. This is done by breaking off the small lateral roots when the larger roots are dug for use. These are cut into pieces about four inches long, tied into bundles and stored in sand until spring. Then, after the garden has been prepared, they can be planted about four inches under the ground. It is customary to cut the top square and the bottom obliquely when they are removed from the parent roots, so that at planting time the right end can be placed uppermost. It is the common practice of home gardeners to plant out whole clumps, but the roots produced are likely to be small and misshapen, while nice, smooth roots are obtained by the practice advocated. When winter comes a few roots can be lifted and placed in a cool cellar, being covered with earth or sand. Then they can be grated and used at any time during the winter.

Asparagus, rhubarb and horseradish constitute three permanent crops which grow on year after year. For that reason they should be given a location at one end of the garden where they will not be disturbed when the work of plowing and harrowing is carried on, and where they will not be in the way.

Garden Beans of Many Kinds



WHATEVER other crops may be grown in the garden, beans should have a large place. There are few vegetables which give such satisfactory returns in any soil. Moreover, fresh beans in one form or another can be eaten most of the summer, while canned or dried beans form a nutritious article of diet in the winter months. It is to be recommended that a liberal planting of beans be made, with the expectation of harvesting a surplus to use during the winter.

Many varieties are catalogued, but none are better for the home garden than the Horticultural, both the dwarf and the pole sorts. They are delicious when eaten as string beans, and equally good when allowed to mature and used as shell beans. Then they can be dried and used in winter for baking.

Probably the best dwarf string bean is Stringless Green Pod, which is also fairly early, being ready for the table in sixty-five days. At the same time it may be well to make a small planting of Black Valentine, for, while the pods are small, they are ready ten days earlier.

Golden Wax is an ideal wax bean, and is ready for the table in about sixty days. It is better than the improved Black Wax, in spite of the advertising given the latter, because the season is considerably longer. Both Golden Wax and Stringless Green Pod are excellent beans to can.

In the Western and some of the Middle States Horticultural shell beans are almost wholly unknown, all garden-makers growing limas. It would be well if the gardeners in all sections were better acquainted with



Drying Beans

both kinds. It is true that limas take a long season, but there is no reason why they should not be grown, even in New England, if they are planted before the first of June. Lima beans are especially nutritious, and they are excellent when dried for winter use.

Lima beans need much richer ground than other beans. An especially good way to get a big crop is to dig out a

trench a foot wide and equally deep. Then a layer of manure may be thrown into the bottom and the trench filled with soil. If the beans are planted in double rows, six inches apart each way, in the ground thus prepared, they will yield an immense crop. The Fordhook Bush Lima is the best variety for the North, as it matures quickly. In the South many gardeners have a preference for the pole limas, as they yield somewhat more heavily.

Bush limas should be sown from one to two inches deep, depending on the soil, and it is a good plan to plant them with the eye down, as they will come up more quickly and more surely. A pint of seed should sow a hundred feet of row.

All bush beans should stand in rows about two feet apart. Four inches is far enough for spacing the seeds of all except the limas. The planting depth is the same.

Very commonly the man with a little land is advised to plant only bush beans, the argument being advanced that pole beans require too much room. There are two sides to this question, however. It is true that pole beans must have more space in the garden than the bush varieties, but at the same time they bear much more abundantly.

It is necessary to make several plantings of the bush beans, but the pole beans will continue yielding well for a long period, and if a second planting is made about two weeks after the first seeds go in, there will be no lack of beans until frost. It is a good plan to make a first planting on one side of the poles, and a second on the other. All things considered, therefore, when such varieties as Lazywife, Kentucky Wonder and Horticultural

are chosen, pole beans are likely to be much more satisfactory, even in a small garden, than the bush varieties.

Probably the best pole bean, all things considered, is the Kentucky Wonder, because of its productiveness and its enormous size. There are sections, however, in which this variety rusts pretty badly. Although not so well known, the Kentucky Wonder Wax is equally satisfactory, and it is one of the best beans to be grown by the amateur who likes the yellow variety.

Of course it is sometimes difficult to obtain bean poles, although there are plenty of them in all suburban sections. Poles should be from six to eight feet long, and go into the ground at least eighteen inches, a hole being made for them with a crowbar when the beans are planted. Cedar poles are the best, because they last several years.

Pole beans need fairly rich ground, and it is well to throw a forkful of manure into the bottom of the hill, covering it with two inches of earth. The seeds should be planted rather thickly, and the seedlings thinned so that three or four plants will be left.

Dwarf beans do not need as rich soil as pole beans, and yet it is a mistake to think they will grow without any plant food to subsist upon. A garden which has been made fairly rich by the use of barnyard manure will grow the best beans. Moreover, the soil must be kept well cultivated from the start.

At the same time the garden-maker must remember that beans are subject to blight, and that if the vines are cultivated or worked among while they are wet with rain or dew, the spread of blight is likely to be increased. Even picking of beans should be delayed until the vines

are dried off. Care should be taken in picking, too, not to disturb the roots. One hand should hold the vine while the other is removing the pods. The vines will cease to bear unless the beans are kept picked. It is a good plan to go over the rows every other day, removing every bean which is large enough, whether needed for immediate use or not. If they cannot be used on the table they can be canned.

Altogether, the bean is one of the vegetables which should have more than usual attention when food supplies are scarce. With early bush beans to give the first pickings and pole beans for extending the season, beans can be eaten and canned most of the summer.

Cabbages and Cauliflowers



CABBAGES must be given a place among the popular vegetables for backyard gardens, even though they contain less nourishment than many other kinds and take considerable space. Sometimes, however, the amateur is tempted to grow more cabbages than he is warranted in doing, for they do not keep well when winter comes, unless an outside storage cellar can be provided. A small number may be buried in the ground, but this practice is more or less uncertain in its results.

The cabbage is hardier than most people realize, and may be set in the open ground almost as early as the wrinkled peas can be planted. Started plants may be purchased if desired, and probably this is the best plan when only a few are to be grown.

It is a simple matter, however, to start plants in a seed-box in the kitchen, or in a cold frame outside, the seed being sown about the middle of March. Cabbage plants set out very early in the spring should be ready for the table in July.

In order to have a succession all through the summer, with a few plants to store for winter use, another sowing must be made later, this time outside, say about the end of May.

Probably the best way to grow the late cabbage is to thin out the plants when large enough to be handled easily, the thinnings being set in another row. The transplanted cabbages will come along almost as fast as those left standing.

When transplanting is being done in warm weather it is advisable to shear off the top of each leaf in order to check evaporation. Cabbages can be transplanted

safely at any season if this is done and if they are set so deeply in the ground that the soil comes to the first leaf. This is an important point to remember. Cabbages should be thinned or transplanted so as to stand about 18 inches apart in the rows.

If any choice can be made, let the richest ground be given to the early cabbages. The late kinds do better on rather poor soil, as too much fertilizer causes the heads to burst.

If it is found in the fall that the heads of cabbages are breaking, it is a good plan to go along the rows and push over each cabbage with the foot, so that the roots on one side will be broken. This will check the trouble, as less nourishment will be taken up.

Cabbage is subject to clubroot, especially if grown in the same ground several years in succession. A new piece of garden should be given to the cabbages, if possible, each year. Lime is a preventive to a large extent, and if planting on old ground must be resorted to, it is well to use lime freely.

A good way to feed cabbages when the soil is poor is to dig out the furrows six inches deep and put in a layer of well rotted manure or garden fertilizer, filling in with soil again before the seed is planted. When growth is started, the plants can be stimulated by using a little nitrate of soda along the rows, working it into the ground just before a rain. A handful to a yard will be about the right quantity.

Among the good varieties are Succession, Ball Head and Copenhagen Market. If one likes red cabbage, let him plant Danish Long Head. Copenhagen Market is perhaps the best kind to plant first, as it matures in

100 days from the sowing of the seeds. Succession takes 135 days.

In the opinion of many people the Savoy cabbages are the best of all. They are not commonly found in the market, not being very good shippers, but are especially valuable for the backyard garden. They take rather a long season, however. American Drumhead requires 150 days to mature. The Savoy has a curled leaf and look very attractive when growing.

Many amateurs hesitate to grow cauliflowers, thinking they are hard to manage. There is no difficulty about raising them, however, if one gets good seeds. This means getting the best quality regardless of price.

Of course it is necessary to start cauliflower plants indoors or in a cold frame in order to have an early crop. But a late crop can be grown from seeds sown in the open ground late in April in the North, and earlier farther South. Cauliflower plants may be purchased in most sections, and perhaps this is the best plan when the season is short.

Cauliflower likes very rich ground and does well if a little wood ashes has been incorporated into the soil. It is also advisable, when possible, to plant on ground which has been limed. Constant cultivation is necessary, but it should be shallow, as the roots run near the surface of the ground.

When the heads begin to develop the leaves must be tied up over them in order that the centers may be nicely blanched. If this is not done, the sun will burn the heads and turn them brown.

Of course considerable skill is required to get the perfect plants produced by market gardeners, but there is

no reason why good plants for the table cannot be grown in the average garden.

Perhaps the best kind to use is early dwarf Erfurt, as it will stand close planting and makes large, pure white heads when well blanched. These plants can stand as near together as 15 inches. Another very good kind for the home garden is Early Snowball.

See the chapter on garden pests for directions about fighting cabbage worms and cabbage maggots.

Growing the Sweetest Sweet Corn



SOMETIMES the backyard garden-maker is told that he hasn't room for sweet corn. If the garden happens to be very small indeed, this may be true, but ordinarily space can be found for enough corn, if a dwarf variety like Golden Bantam is planted, to provide a liberal supply for the family. There is a special reason why sweet corn should have a place in the home garden. It is one of the vegetables which must go directly to the table if it is to be enjoyed at its best. Sweet corn loses at least half its sugar content within a comparatively few hours. That is the reason that corn of the best quality can seldom be obtained at a restaurant or hotel. Many amateurs who grow corn for the first time are amazed at the quality which they find in it. Perhaps they had never known before what corn ought to taste like.

Years ago it was difficult to sell Golden Bantam in the market, but now it is in great demand, because its extra fine flavor has been generally recognized. It is being improved, too, so that larger ears than formerly are produced. One special advantage in this variety lies in the fact that it can be planted in drills, so that comparatively little space is required. This is also true of other dwarf varieties, like Peep-o'-Day. At the same time too close planting must be avoided. The rows should be about three feet apart, but the plants should stand no closer than ten inches apart in the rows. If the plan of using hills is preferred, they should be about three feet apart each way, and not more than three stalks should be allowed to grow in each hill.

One mistake which amateurs often fall into is the planting of corn in one or two long rows, instead of

several short rows. There is danger when this practice is followed that the corn will not be properly pollenized. The pollen is carried by the wind, and is best distributed when the plants stand in squares or blocks. It is well to remember, too, that if two or more kinds of corn are planted close together there is danger of crossing, so that an ear of Golden Bantam, which is yellow, may contain occasional white kernels, or even black kernels, if the variety known as Black Mexican happens to be grown nearby. Of course, no harm is done when seed is not to be saved, but most people take pride in the appearance as well as the flavor of their corn.

The way to have sweet corn all summer is to make successive plantings. It is possible, of course, to plant early and late kinds, like Peep-o'-Day and Stowell's Evergreen, at the same time, and thus give a long season, but as a rule it is better to plant the same variety every ten days or two weeks, up to the first of July in the Northern States, and a month later farther south. If the fall happens to be a late one, Golden Bantam, planted in the middle of July, will yield a bountiful crop before cold weather comes, even in the North.

It is well to remember that corn is a heavy feeder. Perhaps it is possible to get the ground too rich for corn, but it is safe to say that the average amateur need have no worry on that score. Corn can be fed on rank fertilizers, too, more safely than most garden crops. There is no better place for poultry manure than the bottom of a cornhill. Not only is it well to enrich the hills, but much can be done toward increasing the yield by spreading fertilizer along the rows after the plants are well started, then raking it into the soil. A special corn

fertilizer or any good top dressing can be used in this way.

If the soil is light, the seed should be planted two inches deep. In heavy soil an inch will be deep enough. It is well to plant the seeds somewhat thicker than the stalks are to stand, and then to thin out those which are not needed, provided the cutworms do not do this work. Sometimes much loss is experienced through the inroads of these pests, especially in new ground. If one wishes to have a few particularly early ears, he can start a number of plants in paper pots or in strawberry baskets in the house, or in a cold frame, before it is safe to plant outside.

Corn is a crop which requires much cultivation in order to get the best results. This cultivation must be shallow, however, after the plants begin to grow, because the roots extend all through the ground between the rows and very near the surface. Usually the weeds can be kept down without trouble between the rows by the use of a wheel hoe or hand cultivator, but it will be necessary to use a common hoe in order to keep the ground between the plants clean. Indeed, a little hand-weeding may be necessary at first. If the garden-maker has an abundance of water, it may be used to advantage on corn, for in a dry season water will bring the crop along a week or more earlier than if cultivation alone is depended upon.

It used to be the regular custom of all garden-makers to hill their corn, but it has been found that there is no real argument for this practice. The amateur will get better results if he adopts level culture, because hilling tends to throw the rainwater away from the plants, exposes more of the surface soil to the sun, which in-

creases evaporation, and adds to his work without any good reason. It is sometimes argued that hilling keeps the wind from blowing the cornstalks over, but if the seed is planted as deep as suggested, the dwarf varieties will suffer but little from the action of the wind in the backyard garden.

Whether or not it is a good plan to remove the suckers is a mooted question. Thousands of men can remember wearisome days, when they were boys, spent in this work. They wonder if their time and labor were not wasted. It is pretty safe to say that the backyard gardener will accomplish but little in removing the suckers from such varieties as he is likely to grow, especially Golden Bantam.

Fortunately corn is not troubled by many pests. The backyard garden-maker is not likely to be visited by the crows, although he may suffer somewhat from the depredations of the blackbirds, which strip down the ears and eat the kernels.

In some sections the corn earworm has become a great nuisance in recent years. For some time no adequate method of fighting this pest was known, but it has been discovered that it can be kept in check with ease by simply dusting powdered arsenate of lead on the silk.

If the garden-maker happens to live in the open country, where crows pull up the plants as soon as they begin to sprout, he will find it advisable to cover the seed with coal tar.

This is very easily done by putting the seed into an old pan and pouring the tar over it, then adding enough lime or red lead to allow its easy mixing. The crows may begin to pull the corn, but after getting a little of the tar they will quit the field in disgust.

Corn is easily dried or evaporated for winter use, and when one has sufficient land it is advisable to make a large enough planting to give a surplus with this end in view. Further information on this subject will be found in the chapter headed "Growing Vegetables to Can and Evaporate," on page 139.

Good Lettuce All Summer



ALMOST every amateur aspires to raise good lettuce. Few crops are prettier when growing, and no other salad plant is so universally popular. Unfortunately lettuce does not withstand heat well, although a few varieties, like Salamander, will do fairly well in midsummer. It happens that this type of lettuce is by no means the best.

Being a hardy plant, lettuce can be started early, and as it grows rapidly, a spring crop is quickly obtained. To have extra early lettuce, it is necessary to use a hot-bed or cold frame for starting the plants, or to sow seed in boxes indoors. In many of the Southern States seeds may be sown in the autumn and the plants allowed to remain in the ground over winter.

If lettuce is allowed to grow slowly in poor ground, it will be tough and unsatisfactory. One way to have quality lettuce is to make it grow rapidly, which means that it must have good, rich ground and plenty of room. Water, too, is of great benefit.

Lettuce may be planted outside as soon as the ground can be worked. It is a common mistake to put in a lot of seed at one time. A better way is to plant little and often, so that a fresh supply will be coming along at all times. It is not necessary to devote much space in the garden exclusively to lettuce. The best plan is to plant a short row and to use the plants which are thinned out to tuck in here and there wherever there is an empty space in the garden. In order to have sufficient room for proper development, the plants should be thinned so that they will stand at least twelve inches apart.

There is no particular reason for growing head lettuce

in the backyard garden. The loose-leaf varieties come along much more rapidly and can be used when small. The new, tender young leaves are really preferable to any head. It is purely ignorance on the part of many housewives which makes them demand head lettuce for home use.

If head lettuce is to be grown, however, it will be desirable to reset all of the plants. Transplanting seems to make them head up better. It will also be necessary to have extra rich ground and to apply water freely. Indeed, one secret of making lettuce head well is the liberal use of water. A teaspoonful of nitrate of soda dug into the soil at the base of each plant once or twice will prove a great stimulant. About the same results can be obtained by the use of manure water. All lettuce must have regular cultivation, and the use of the fertilizers mentioned will help to force the growth if it seems to lag.

When extremely hot weather approaches, lettuce begins to get sunburned, to grow slowly, and perhaps becomes bitter. If the plants can be grown where they will be shaded in the middle of the day, or if shade in the way of burlap or canvas fastened to stakes can be given, better results will be obtained than when the plants are exposed to the sun all day. Lettuce which is being started in midsummer should always be shaded.

Perhaps the most satisfactory way to grow lettuce all through the summer is to make use of a cold frame. Lettuce grown in such a frame is protected from drying winds, and thrives much better than in the open ground. Of course it will not be necessary to have any glass on the frame, and protection from the sun can be obtained by using laths to make a covering for the frame, the laths

being spaced about an inch apart. This will break the sun's rays.

When fall approaches, lettuce can be grown as freely in the open ground as in the spring, and it will stand up under the first light frost. If small plants are lifted in October and set in a cold frame or hotbed, they can be kept on growing until Christmas, or even later, but of course glass must be used on the frame then.

Of the many different varieties of lettuce on the market, Grand Rapids is as good as any among the loose-leaved varieties.

One successful garden-maker who has been experimenting with Regina lettuce calls it the best hot-weather variety he has ever tried, the leaves being very crisp and tender ten weeks from planting, in spite of extreme heat.

Among the specially good varieties are Wayahead, which matures in 52 days; May King, which requires 56 days; All Seasons, which needs 61 days; and Crisp as Ice, which demands 65 days to mature, but is a very fine variety. Although repeated sowings of a favorite kind are usually made by the backyard gardener, there is no reason why a long succession cannot be secured by planting different varieties at the same time.

Romaine or Cos lettuce is distinctly different from the more common sorts, but is well liked by some people, especially those from over seas. It makes a tall and upright growth. Oftentimes the leaves grow so tightly that the center is naturally blanched. Otherwise it is a good plan to tie up the leaves with raffia or common twine when they are about a foot long. The heart then becomes particularly sweet and tender. It is well worth while growing a little Cos lettuce in a row by itself.

Onions from Seeds and Sets



ALL undiscouraged by the fact that onions are a difficult crop to grow unless extra pains are taken with them, many amateurs blithely plant several rows of seed each year, only to reap a harvest of disappointment. Yet there is no reason why a good crop cannot be produced from seeds if the soil is made very fine and kept absolutely free from weeds.

There are so many different varieties of onions that it is possible to have early, medium and late crops, the last for winter use. Also, there are white, yellow and red varieties. The white kinds are probably the most popular, yet many persons like the red onion, especially the Italian varieties, which are delicious when used young in salads, and excellent for pickling.

The red Italian Tripoli is a flat onion with a mild flavor and well worth growing in the garden. Another variety of Italian Tripoli is white, but otherwise similar. Then there is the white Adriatic Barletta, the earliest of all the small onions, and especially adapted for table use. Perhaps it is the best variety to grow for quick results. The red Wethersfield is a very heavy bearer, and probably the best keeper of all the red onions. It is a good kind to grow for winter.

It is time to plant the seed for the winter crop just as soon as the ground can be worked. If the land happens to be heavy, the seed should not go into the ground deeper than a quarter of an inch. On very light soil, however, the seed may be planted half an inch or even an inch deep, with better results.

It must be remembered that onions must be fed heavily in order to make them grow well. If the ground has

been made rich with well-rotted manure, no more fertilizer may be necessary, but otherwise it will be well to spread pulverized sheep manure, with a little bonemeal added, over the ground where the onions are to go, and spade it thoroughly into the soil. Sometimes it is well to use a little bonemeal even when manure has been spread previously. Good onions can be grown with a ready-mixed fertilizer alone.

Onion seeds, like the seeds of some other vegetables, are rather slow to germinate, and for that reason it is advisable to scatter a few radish seeds in the rows, as they will come up quickly and permit cultivation to be commenced before the onion tops show. This is very important, because it is absolutely impossible to grow weeds and onions on the same soil. Not only must the weeds be kept removed along the rows, but they must be taken out by hand from between the plants. This may mean getting down on one's knees, and one may dislike humbling himself to an onion, but there is no other way in which to grow this crop successfully.

As soon as the plants begin to crowd they should be thinned an inch apart. Later on they may be thinned again to stand three inches apart, but these later thinnings will be large enough for use on the table.

The way to have extra early onions is to plant sets as soon as the ground can be worked. These sets are really very small onions which were grown the previous year, and they may be purchased by the pint or quart. They do not multiply, but grow to edible size in a few weeks. They should be planted in well prepared ground, just under the surface, the onions being placed about three inches apart. It is not wise to grow more than a row or two, but a few

sets are worth a place in the garden, if the owner is particularly fond of onions.

One kind of onion, called the multiplier, or potato onion, may be planted in the fall. It is hardy and will provide green onions early in the spring.

A Long Season of Peas



PROBABLY peas have caused more disappointment than any other garden crop. It requires good soil and more than usual attention to get a really bountiful crop. Ordinarily the vines will yield two pickings and then cease to bear. With the later and taller varieties, however, a more generous crop may be obtained.

Fortunately peas are very hardy, so that they can be planted early. The smooth peas can be put in as soon as the ground can be worked, oftentimes by the last of March, even in the Northern States. In the Middle States and in the South these smooth peas can be sown in the fall to give an extra early crop. The smooth peas, however, are less satisfactory than the wrinkled sorts, and only a few should be planted. Even the wrinkled peas can be put into the ground some time before danger of frost is over.

It is customary to plant the quick-growing dwarf varieties first. Such kinds as Gradus and Nott's Excelsior are dependable. Another low-growing variety which has come into favor lately is Little Marvel. The pods are not large, but they are packed tightly with well flavored peas.

While people who have a special fondness for certain varieties often plant them in succession every ten days up to the middle of June, it is a simpler practice to plant early, medium early and late varieties at the same time. Then, in June, a final planting of Thomas Laxton may be made. A good selection includes the following varieties:

Early—Little Marvel, maturing in 60 days; Gradus, maturing in 68 days.

Medium Early—Thomas Laxton, which requires 72 days to mature.

Late—Alderman, which matures in 80 days; Telephone, which requires 87 days.

Another late variety which succeeds well in many sections, although not commonly well-known, is Potlach. It matures in 86 days, and averages to yield twelve quarts for every fifteen feet of row, which is more than any other variety.

The earliest peas require no supports. Little Marvel, for example, grows only one and a half feet high. Gradus is a foot higher, and will get along well without support, although a little brush is an advantage. All the others named like some sort of support. Alderman and Telephone often grow five feet high. Potlach and Thomas Laxton seldom grow over three feet high.

Amateurs are sometimes misled by the argument that tall-growing peas are not suitable for a small garden. As a matter of fact, it is better to have one row of Telephone late in the season than two rows of Gradus, for they will produce more than twice as many pods, and the pods will be much larger. The writer is wholly in favor of the taller varieties for late crops because of this reason, and also because the vines do not dry out so quickly.

Peas require land which has been well worked up, and should be sown in wide trenches rather than in narrow drills like most vegetable crops. The best plan is to dig out a trench about ten inches wide and from two to three inches deep, scattering the peas over the bottom of this trench. In that way the vines become self-supporting to some extent, and are not likely to dry out quickly. As a rule a pint of seed will plant about thirty feet of row.

Some growers like to make double rows about six inches apart. After the peas have been planted it is important to firm the soil over them with the feet or the flat end of the hoe.

If the ground is at all dry, or if the season is late, it is an excellent plan to soak the seed peas over night in lukewarm water, or to wet down the ground in the trenches with a watering-can before the seed is planted. Quick germination is essential in order to get an early crop, but if the soil is moist, as it is likely to be in early spring, firming the surface so as to bring the soil particles into close contact with the seed will suffice.

As a rule it is not necessary to use any commercial fertilizer in growing peas, either before the crop is planted or afterward, if the ground is reasonably rich. However, peas like an abundance of water, and if they can be kept irrigated, that will be an advantage. The pea is a cool-weather vegetable, which is the reason that it is difficult to grow good crops after hot weather comes.

If a late planting is to be made, the seed should go into the ground deeper than earlier in the season. Four or even five inches may not be too deep if the soil is loose. Of course, as with all seeds, planting must not be made so deeply in heavy as in light soil.

Brush gives the best support for peas, but if it is not easily obtained, strings fastened to stakes at the ends of the rows, and at ten-foot intervals, will prevent the plants from being blown over. Poultry netting can be used, too, but is almost too expensive for the purpose at the present time.

One point to be remembered when picking peas is that the roots are easily disturbed. The vines should be held

with one hand while the pods are removed with the other. To jerk off the pods will be to damage the plants.

One other point, an important one, is that peas are never at their best unless caught young. If left until they get rather old, they will be tough and flavorless. Moreover, they should be served as soon as possible after being removed from the garden. It is one of the advantages of having one's own garden plot that one can enjoy such peas as can never be purchased in the market.

The Root Crop Quintet



THERE are five root crops that ought to have a place in every backyard garden, whatever else is grown. Beets, carrots, turnips, parsnips and salsify are among the most useful of all garden vegetables. They are said to contain properties which make them almost necessary for human consumption, and they have the special merit of prolonging the season practically all winter, as they can either be stored in the cellar or left in the open ground.

Beets and carrots divide honors for first place in popular esteem. Both should be grown with the idea of having the tender young specimens all summer and a good crop to keep for winter use. All of the vegetables named are hardy and can be planted as soon as the ground can be worked. Possibly the planting of parsnips should be delayed a little, because the seed is somewhat inclined to rot in cold ground.

All root crops like rich ground, but if fresh manure is used are likely to split or crack. In order to get well-shaped roots, the land must be spaded or plowed as deeply as possible. A simple way to get first-class parsnips is to thrust a crowbar into the ground, and then to fill the hole with a sifted loam mixed with old manure or pulverized sheep manure. The seeds planted under these conditions will produce long, shapely parsnips. There should be about a foot and a half between the rows of root crops, so that cultivation can be done with a wheel hoe.

There is a general tendency to plant the seeds too thickly. This mistake should be avoided at the present time, not only because of the extra work involved in thinning, but because seed is scarce. It is not commonly

realized that beet seed is a kind of pod containing several germs, each of which will sprout. An inch apart is about the right distance for putting in beet seed. Even then considerable thinning will be necessary, for the growing plants should be four inches apart; but the thinnings can be used for greens. Beet seed should go about an inch under the ground.

Carrots require practically the same treatment as beets, but can stand as close as three inches. The young carrots which may be thinned out are excellent for table use.

Parsnips require about six inches of space, and the seed should be planted an inch deep. Both parsnip and carrot seed are rather slow to germinate, and there is great danger that weeds will come up so thickly before the young plants appear that the latter will be choked out. For that reason it is an excellent plan to use radish seed thinly in the rows. The radishes will come up in a few days, and mark the rows so that cultivation can be taken up promptly. In this way the weeds can be kept under control. Even when this is done, however, considerable hand-weeding between the plants will be necessary. All root crops require constant and thorough cultivation if they are to be grown well.

Beets and carrots grow rather quickly, and successive planting should be made in order to have young, tender specimens for the table all summer. Early in June a planting for the winter crop should be made. Perhaps the best beets to grow first of all are Eclipse, which under favorable conditions mature in sixty days. They get tough after a short time, however, so that it is well to sow Detroit Dark Red and depend upon this variety for the other summer crops. It takes a week longer to mature,

but it is the very best beet for the home garden. It makes an excellent beet to can, the tops are unusually good for greens, and there is no reason why it should not be made the main crop for winter use. On the whole, though, it may be advisable to plant a row of Long Smooth Blood early in June to be stored.

The French Forcing carrot is probably the best to plant first of all, because it comes along very quickly. Then at the same time Chantenay may be planted to give a later crop, and continued at intervals. Chantenay also makes a good kind to store for winter, although Long Red Surrey will grow bigger and possibly keep a little better.

Parsnips take the whole season, and are not available for use until fall. They are not commonly eaten until winter comes, because they are best-flavored after the ground is frozen. Being perfectly hardy, they can be left in the ground all winter, and will be highly appreciated when spring comes. If the ground where they are planted is covered with boards or hay late in the season, the parsnips can be dug out at intervals through the winter. Of course in the States farther South they are available at all times. The Student parsnip is one of the best for the home garden, although Hollow Crown is probably better known.

The turnip is a particularly useful garden vegetable because of its quick growth. It is unrivaled for planting here and there about the garden to occupy empty spaces where other seeds have not come up. White Milan is perhaps the best of the early sorts, although Purple Top Munich is popular. Both are ready for the table in two months from the time they are planted. Like

all quick-growing vegetables, however, they must be used promptly, for they soon get tough and stringy. These same varieties can be sown at intervals of two weeks all through the summer.

About the first of July a generous planting of winter turnips should be made. Probably the most satisfactory kinds are those of the rutabaga type. The rutabagas are also called Swedish and Russian turnips. They grow very large, keep perfectly, and are unsurpassed for table use. American Purple Top is an excellent variety. Because of its value as a winter vegetable the rutabaga turnip should be given an extra large amount of space. This can be done to advantage from the fact that its late planting allows it to follow an early crop like peas or spinach.

The early turnips should stand about three inches apart, and the seed be planted half an inch deep. The rutabagas will require twice as much space, and perhaps more.

Another root crop which requires practically the same care as the rutabaga is the winter radish. Few people have grown these radishes in the past, but they are well worth getting acquainted with, because they grow to enormous size and can be stored like any winter vegetable. Although they are rather sharp, they can be eaten raw, and they make a desirable dish when cooked like turnips.

Salsify, or vegetable oyster, if given practically the same care as the parsnip, will make good growth and be ready for use in the fall. Like the parsnip, it can be left in the ground all winter, being especially prized in the spring. It is very hardy, and may be planted as early as beets and carrots, but it must have extra rich ground,

and ground which has been worked deeply. The vegetable oyster gets its name from the fact that when cut into cubes and creamed the flavor is very much like that of genuine oysters.

There is no secret about growing the root crops. The garden-maker can get a large amount of food on a comparatively small amount of ground by paying special attention to them. He must be very careful, however, to get them well started, which means planting the seed in soil that has been finely pulverized, and taking care to firm the soil well over the seed, either with the foot or by the use of a roller.

The Little Potato Patch

MOST garden-makers have an ambition to grow potatoes. If the garden happens to be of very limited area, however, it is much better to devote all the space to other crops. Potatoes require a considerable amount of land in order to produce a worth-while yield. Perhaps it may be said, also, that potatoes are not so easy to grow as the average garden novice supposes. They are attacked by more different kinds of insect pests and fungus diseases than almost any other vegetable in the garden. But this is not meant to be unduly discouraging, for many amateur garden-makers are able to grow first-rate potatoes, and to obtain an abundant yield. Yet it is safe to say that these successful amateurs take more than ordinary pains with the crop.

Potatoes like a loose, loamy soil. If the garden is heavy and full of clay, it is much better to check one's desire to grow spuds, and put in their place vegetables which are more suited to such soil.

In order to grow good potatoes it is necessary to have land well filled with humus, which is simply decayed vegetable matter. That is the reason that a piece of sod land gives particularly good results. If a new garden is to be made by turning the sods under, it is a good plan to grow potatoes there for one year. The crop will probably be a good one, and the land will then be put into condition for all the other garden crops. It is important, however, to have the ground well worked up, even when sod land is used. It should be thoroughly harrowed, preferably with a disk harrow, if there is room enough for such an implement to be used.

Potatoes can be planted early, and early planting usu-

ally gives the largest crop. The better the seed, the better the crop, but of course the backyard garden-maker is obliged to use what he can obtain. If possible, though, he should select seed potatoes which are of moderate size, and with eyes which are not deep-set. Potatoes with one long pointed end are to be avoided.

It has been found that the biggest yield comes when whole potatoes are planted. But it is expensive to plant whole potatoes, and accordingly it is the common practice to cut the tubers into pieces, each of which has two good eyes. Two pieces may be placed in a hill.

Much has been said about the planting of potato parings. Experience has shown that it is perfectly feasible to pare the potatoes which are to be used on the table, cutting into flesh rather deeply wherever an eye appears. If these eyes, with little pieces of potato adhering to them, are planted, they will give a very fair crop. In this way it is possible to obtain seed for the potato patch without any expense. It is important, however, to plant the eyes very soon after they have been cut out. These eyes should be put under the ground only about two inches. If they are planted as deeply as ordinary seed it is probable that no crop will be obtained.

One of the most common fungus diseases encountered by the potato-grower is scab. This can be kept away almost entirely by soaking the seed before it is planted. Sometimes corrosive sublimate is used to soak the seed in, but it is not recommended for the amateur's use, as it is a deadly poison. Formalin is a safe and effective remedy. It may be obtained at any drugstore, and half a pint will be sufficient. This amount should be mixed with fifteen gallons of water, and placed in a barrel or

tub, the potatoes then being poured into a grain sack and suspended in the liquid for two hours.

The formalin does not lose its strength quickly, and may be used several times. Neighbors can dip their potatoes in the same solution. The mistake of cutting the potatoes before they are soaked should not be made, for if this is done the formalin may get under the skin and kill the eyes. Of course the potatoes should be dried before they are planted, but they should not be placed in any sack or box which has had untreated potatoes in it.

It is generally believed that the use of fresh manure on land where potatoes are to be grown will encourage the appearance of scab, although such manure is often used and no trouble experienced. If the manure does not come into direct contact with the seed, it is less likely to cause trouble. Cow manure seems safer than horse manure. It is better, anyway, for the amateur to use manure and run the risk of scab than to plant in land which has not been fertilized at all. The average backyard gardener probably can obtain commercial fertilizer easier than he can get manure. It will be safer for him to use, and will give just as good results.

Practically all seedsmen sell a regular potato fertilizer, and it should be used in the hills. The potato is not a good forager, and hill applications give better results than when the fertilizer is scattered over the ground and harrowed in. One way to use the fertilizer is to make hills or furrows about seven inches deep, throwing two inches of soil over the fertilizer after it has been put in.

Another plan, and perhaps a better one for the home gardener, is to plant the potatoes six inches deep, throwing two inches of soil over them, and then scattering the

fertilizer in the hills or furrows. Actual experience shows a larger yield to be obtained when the fertilizer is put over the seed than when it is put under it.

Shallow planting is a common mistake of the amateur. Five or six inches is none too deep for the seed potatoes to go under the ground. Probably the best plan to follow is to make furrows, a piece of seed potato being dropped every eight or ten inches. This is more economical of room than when hills are used, and the crop is just as large.

After the potatoes come up they must be sprayed continually to protect them from bugs and blight. The bugs are easily subdued if the plants are sprayed with a poison, which may take the form of arsenate of lead either in solution or dry. In a small garden dry arsenate of lead works very well. It must be remembered that the time to catch these pests is when they are in the soft larva stage, before they acquire their hard shells.

There is an early and a late blight. It is the latter which often does the most damage, and it is commonly associated with dry rot. The remedy for blight is Bordeaux mixture, which, like the arsenate of lead, may be applied wet or dry. The easiest way to protect the potato plants is to combine the poison and the fungicide. Perhaps there is no better plan for the amateur to adopt than to use a ready-made mixture, or to buy powdered arsenate of lead and powdered Bordeaux, mixing them himself and applying with a hand duster. It is not safe to grow potatoes unless the precautions described are taken. Seed and land are too valuable for any risk to be taken.

As with apples, different varieties of potatoes give best results in different parts of the country. In the

Northeastern United States and along the South Atlantic seaboard the Irish Cobbler, Early Petoskey or Early Standard, all of which are practically identical, may be expected to produce large crops and be generally satisfactory for an early crop. Quick Lunch or New Queen would be regarded as second choice for this section.

In the South Central and Southwestern States the Triumph may be expected to give results equal to or even better than the Irish Cobbler.

In the Middle West, the Early Ohio should do well, while the Early Harvest or Early Rose may be regarded as second choice.

In the New England States, Long Island and Northern New York Green Mountain and Gold Coin are to be considered the best late varieties.

In Northern Michigan, Wisconsin and Minnesota the late varieties named above do about as well as the Rural New Yorker No. 2, and are superior to it in table qualities.

In Western New York, Southern Michigan and Wisconsin and Iowa the Rural New Yorker No. 2, Sir Walter Raleigh and Carman No. 3 are the best-adapted varieties and divide honors with Green Mountain in the northern portions of these States.

Throughout Maryland, Virginia, the Carolinas, Tennessee and Georgia the variety known as McCormick is quite generally grown as a late variety.

The following dates of planting for various cities should be regarded only as the approximate time at which early potatoes might safely be planted:

March 15 to 25—Washington, Baltimore, Philadelphia, Cincinnati, Louisville, St. Louis.

March 25 to April 5—New York, Indianapolis, Detroit, Chicago.

April 5 to 15—Boston, Albany, Rochester, etc.

In the Northern sections late varieties should be planted from three to four weeks later.

In the Northern States the season is too short for growing sweet potatoes, but they are popular from the Middle States south. They are usually propagated by sprouts from tubers. A single layer of tubers is placed in a hotbed or cold frame in April or May, being lightly covered with soil. When three inches high the sprouts are removed from the tubers carefully and planted in the garden. Started plants ready for setting out may be purchased in May or June from seedsmen and plant dealers. The rows should be about three feet apart and the plants fourteen to twenty inches apart in the rows. Cultivation should be thorough until the plants are established, and it is well to move the vines about at the same time to prevent their rooting down at the joints. The potatoes should be dug as soon as the tops have been killed down. Sweet potatoes are not easily stored for winter unless they can be given a warm, dry place. They will quickly decay, too, if bruised, and must therefore be harvested with care.

Spinach and Other Greens



SPINACH is one of the very hardy vegetables which can be planted just as soon as the ground has ceased to be sticky. It is one of the most satisfactory crops, too, if greens are liked.

It is best to sow spinach seed in the open ground where the plants are to remain. Thin the seedlings to about eight inches. Usually two or three sowings are made, ten days apart, but when warm weather comes, ordinary spinach is not easily grown, as it gets tough or goes to seed. For this reason the wise gardener will plant New Zealand spinach, which is really not a spinach at all, but a most satisfactory substitute, and thrives in the hottest of summer weather.

New Zealand spinach has one great advantage over most garden vegetables in that a single row will be sufficient. If only four or five inches are removed from the tips of the leaves as fast as they develop, new growth will continually appear all through the season. This makes New Zealand spinach an extra good vegetable for the small garden, because enough for the family can be grown on a limited area. If the land is rich it is often possible to pick as much as a peck of greens from a single plant several times a season. The seed should be sown early in May and the plants thinned to sixteen or eighteen inches in the row, as they grow very luxuriantly in rich soil. It is best to have the land well fertilized, and if a little nitrate of soda can be applied several times during the summer, say a teaspoonful at the base of each plant, growth will be increased. Of course care must be taken that this fertilizer does not come in contact with the stalks, and it is best used shortly before a rain. If

nitrate of soda is not available, liquid manure diluted to the color of weak tea will prove an excellent substitute. A little bonemeal stirred into the soil will also be good.

In September it will be well for the amateur to make a sowing of prickly spinach to be left in the ground over winter. This spinach will survive even the coldest winter if lightly covered with hay or straw, and be ready to yield a bountiful crop next spring.

Although endive is not commonly grown in American gardens, it is worth getting acquainted with, especially for a fall salad. One of its principal advantages lies in the fact that it is very hardy, so that it is not easily killed by frost, and it will grow out-of-doors until late in the season. Then it may be lifted and taken into the house cellar, or placed in a cold frame, where the plants will blanch nicely and can be used when wanted.

Of course the crop is also available all through the fall months, when it is blanched by tying the leaves up over the heads, which causes the heads to whiten. This is done not only for appearance, but because the bleaching process also removes much of the bitterness which is to be found in the unblanched leaves. The heart makes a salad. Unbleached leaves are eaten for greens.

Although it can be grown at any time during the summer, endive is usually more in demand when fall comes, and for that reason it is not necessary to plant the seed before the middle or end of June. The plants should finally stand about a foot or fifteen inches apart.

This is a good crop to grow in a part of the garden which is not very rich, and no special care is required. Of course larger and better plants can be obtained if a

little bonemeal or nitrate of soda can be used to stimulate them, but they will grow well in any ordinary soil, and even in land which is a little heavy and wet.

Corn salad is a vegetable which comparatively few people know, but which is well worth getting acquainted with, as it makes the very earliest spring salad one can grow. August or September is the time to sow the seed. The plants should be covered lightly with straw or other litter when cold weather comes. Corn salad makes a very good substitute for spinach and requires but little attention after it has been planted. It is recommended to all people who like greens.

Swiss chard is a kind of beet which has been educated to grow to tops instead of making enlarged roots. It should be treated just the same as beets, except that it will require more room. The young plants, however, can be pulled up and used on the table as it becomes necessary to thin them out.

There should be at least fifteen inches between the plants, and it is only necessary to remove the outside leaves as they are wanted for greens, as the plant will continually renew itself from the center. This makes Swiss chard an ideal crop for the small garden. Although the leaves themselves make excellent greens and with quite as much food value as spinach, many amateurs also like to separate the midribs and cook them like asparagus, for which they make a very fair substitute. In some ways Swiss chard is preferable to spinach for greens, as it grows taller and the leaves are more easily cleaned.

Although mustard greens are not grown as commonly as some other kinds, there is no reason why a small space in the garden should not be given them. The leaves are

cooked like spinach and make a very good substitute. The particular merit of mustard lies in the fact that it can be grown very quickly and in almost any soil. The seed should be sown thickly, as early in the spring as the ground can be worked, and at weekly intervals, if a succession is wanted. Usually a planting early in the spring and another in September for fall use will be sufficient. Probably the best all-around variety is Ostrich Plume.

Celery for Home Use



IT IS true that celery is not one of the essential vegetables. Yet it is entitled to a place in any garden because it can be given the room occupied by early vegetables and will not trespass to any great extent on space needed for more important crops.

In the Northern States celery should be started in the house, or in a cold frame early in April, or if very early celery is wanted, the last of March. When the plants have attained their first true leaves they should be transplanted to other boxes, or a new place in the cold frame, and set out in the open ground when danger of frost is past. The early celery may be left to grow where it is planted out, but it is a good plan to move the late plants a second time, for every transplanting helps to prevent the formation of long tap roots and to produce better specimens.

Probably the average backyard garden-maker will not bother to raise his own celery plants, but will buy started plants, which are always offered by the seedstores at a low price late in the spring. It is advisable, on the whole, for the man with a small amount of land not to bother with early celery, but to purchase well-established plants about the first of July. They can be set where the peas were grown, and thus keep the ground occupied all through the season.

It is useless, however, to try to grow celery unless one is willing to give it more than ordinary attention. In the first place the ground must be made very rich, either with old stable manure or with a good fertilizer, bone-meal being of particular advantage.

When purchased plants are used it is necessary to get

them into the ground as soon as possible, for if the roots are allowed to dry out the plants will take a long time to recover. Whether they are home-grown or purchased plants, the removal of the top half of each leaf will be wise, for the evaporation will be checked, and the roots given a better chance to become established. It is also a good plan to trim off at least one-third of the root growth at transplanting time.

When the plants are set in rows where they are to mature, they should stand six inches apart, with two feet between the rows. Of course it is very important to keep the celery plants free from weeds, but it is even more important to retain the moisture in the ground by frequent cultivation.

Few crops are benefited to a greater extent by water than celery. When the market gardeners set their plants in the field they often soak the ground several inches deep beforehand, as the plants thus respond much better than when watered after being set, and there is no reason why this plan should not be followed advantageously in the home garden.

If the amateur is buying plants for early celery he will naturally choose Paris Golden, sometimes called Golden Self-blanching. If, however, he is sowing seed for a winter crop, he will be more likely to choose either Boston Market or Giant Pascal. The latter is rather better for the amateur to grow. Another very good kind for the home gardener is Columbia.

The old-fashioned plan of setting the celery plants in trenches is not followed by most experienced gardeners now. One very good way to grow celery on a small plot is to completely cover the earth with fresh horse manure

two or three inches deep, taking care that the manure does not come in contact with the plants. Not only does the dressing fertilize the celery and cause it to make thrifty growth, but it keeps the ground mulched so that no weeding or cultivation is necessary.

Blanching must be done at just the right time in order to obtain the best results. It is customary to blanch early celery with boards or paper rather than to earth it up. Banking with earth is more or less laborious, but is believed to produce a nuttier flavor than can be obtained in any other way.

However, it is not necessary to blanch even late celery with earth, for the work can be done with boards. Wrapping the celery with heavy paper has come to be quite a common plan, and serves the purpose fairly well when the crop is small.

When boards are used, they should be about fourteen inches high, and they are easily held in place by cleats nailed across the top at occasional intervals. Any old boards one may happen to have around the place will answer.

A few plants may be bleached from time to time by taking them into a dark cellar and setting them in an earthen crock or a pail, so that the roots can be covered with water.

When winter comes the late celery must be dug up and taken into the cellar or stored in a frost-proof place outdoors. Even in the extreme north this work may be done at any time during the month of November, for the celery will be protected to a considerable extent by earth used to bank it.

It is a simple matter for the amateur with a small

amount to store his celery in a cool cellar, simply lifting the plants with as much earth as possible on the roots, and setting them close together, either on the floor or in a box, then covering the roots with earth. If the plants can be set on a bed of earth the roots will take up some nourishment and the plants will keep especially well. Before being taken indoors the outside and all decayed leaves should be removed. It is well to look the celery over at short intervals and to take out any plants which show signs of decay.

If a considerable amount of celery is to be stored it is a better plan to make a pit in the open ground. This is easily done if one has a side hill to burrow into. Otherwise an excavation a few feet deep can be made and covered with boards arranged like a shallow tent. After the weather gets very cold, earth, leaves or hay should be used to cover the boards to a depth of a foot. Of course the amount of protection required to keep out frost will depend upon the severity of the season and climatic conditions.

Another way to keep celery for winter is to bank up earth a foot thick on both sides, and then to throw about three inches over the tops of the plants. The rows should have a width of a foot at the top, and leaves or other material should be used to increase the covering when the weather gets extremely cold. In some sections this method gives very good results, and celery stored in this way has a particularly nutty flavor. One advantage, too, lies in the fact that it is stored just where it grew.

Squashes for Summer and Winter



AS MANY of the summer squashes are of the bush variety, they need not take a great amount of space in the garden, and they are much relished during the hot months. Generally speaking, the crook-neck varieties are to be preferred to the patty-pan sort.

They would be very easy to grow, too, if it were not for the cutworms and the striped beetles. With a little care these insects may be circumvented. Merely throwing wood ashes or tobacco dust into the hills at planting time will help. Tobacco dust may also be sprinkled on the plants and around the stems. It is a particularly good remedy for the striped beetle. Perhaps the best way to guard against the ravages of the cutworm is to plant eight or ten seeds in a hill, thinning out to three or four plants if more than that number escape.

The hills should be about four feet apart, and the best way to have a good crop is to throw a shovelful of manure into the bottom of each hill, covering this with two or three inches of soil. It is useless to plant squashes before settled warm weather comes, for if the ground is cold they will certainly rot instead of sprouting.

Perhaps the best of the summer squashes, although a running variety, is Golden Summer Crookneck. Mammoth White Bush belongs to the round, flat type, but is extremely prolific and very early. A variety new on the market, although it has been grown around Boston for some years, is the Boston Greek squash, which is oblong and dark green in color, reminding one of the English vegetable marrows.

These marrows, in the opinion of many people, are far better for the home garden than the common summer

squash. They grow large, and have firm, solid flesh. There are several varieties, some round and some oblong, and there are both green and white sorts. Also there are bush and running marrows. The latter will spread over much ground, but can be trained on a fence or a trellis. They yield bountifully.

In order to be at their best marrows must be eaten when about half grown, but they are excellent for preserves when older. Besides being suited for a table vegetable, marrows may also be used for pies, and a good marrow pie can hardly be told from an old-fashioned New England pumpkin pie.

The winter squash is not a proper vegetable for the very small garden, for the reason that it requires considerable room. At the same time it is one of the best vegetables to grow for winter use, as it can be stored in a warm cellar, canned or evaporated. Nor does it need to trespass on the garden space to such an extent as is often supposed. If planted near the edge of the garden the vines may be allowed to travel out over the lawn, or they can be trained on a fence, or perhaps allowed to grow among the corn. Moreover, the vines can be kept within reasonable bounds by pinching off the ends when they become too long. Altogether the winter squash is a vegetable to be considered by the amateur. It is not at all hard to grow, but it is tender and cannot be planted safely until the ground is warm. At the same time it requires a long season, and for that reason the seeds should go into the ground as early as is safe.

A sandy loam is best for squashes, as they make their best growth in a warm soil. But they can be grown in almost any ground which is not too heavy. Being gross

feeders, they must be well supplied with fertilizer, which should preferably be barnyard manure. Two shovelful to a hill is not too many, but this should be well covered with soil before the seeds are planted.

It is well to make a generous planting—say a dozen seeds scattered a few inches apart—to allow for the depredations of the cutworm and other pests. If more than four plants develop, they can easily be thinned out.

It is necessary to make the hills at least ten feet apart, and it should not be understood that a hill necessarily means a mound. Level culture is best for squashes as for all other vegetables in the garden which is not wet. And a wet garden is no place for squashes.

Tobacco dust or arsenate of lead may be used for the striped beetles and the flea beetles which are almost certain to appear soon after the plants are up and will destroy them if not taken in hand promptly. One experienced gardener advocates the following plan for frustrating these beetles: He makes a soft paste of wood ashes and kerosene, which he places around the roots of the plants, taking care not to allow it to touch the stems. In some cases two or three applications are made, but almost complete immunity is secured. The writer, however, prefers boxes covered with fly netting to any other plan.

The good old-fashioned Hubbard is one of the best winter squashes as it is the most popular. There are other good kinds, one of these being Bay State, a squash which was originated near Boston and is seldom grown in any other section. It is green with a golden flesh and is a very good keeper. Delicious is one of the best winter keepers.

Growing Quality Tomatoes



TOMATOES are among the indispensable vegetables for any garden, large or small. They must be grown with particular care in the backyard, however, for they are inclined to encroach upon space which is needed for other vegetables.

It is well to have a surplus of tomatoes, for they can be used by the housewife in many ways all through the winter if canned or evaporated. Tomato bisque is a delicacy which ought to be known in every household.

In order to have tomatoes early they must be started early. It is true that many kinds will come into bearing before the end of the season if seeds are sown in the open ground after freezing weather is over, but plants started under glass are needed to give a midsummer crop. If one has a hotbed the seed can be sown there by the middle of March. Plants may be started, too, in boxes in the kitchen early in March, and set out in a cold frame when a few inches high. Indeed they can be grown in the kitchen large enough to set out if shifted from one box to another when the plants have formed their first true leaves. At this second transplanting they should be placed four inches apart. If they can be transplanted to paper pots or even to strawberry baskets, this will be an advantage, because then they can be set in the ground without disturbing the roots. Paper pots are useful in another way. If the bottom is torn out, it will not be necessary to remove the sides, and the latter will serve as a barrier against cutworms, which seem to have a special fondness for young tomato plants. The pots must be set so that an inch at least will be above the ground.

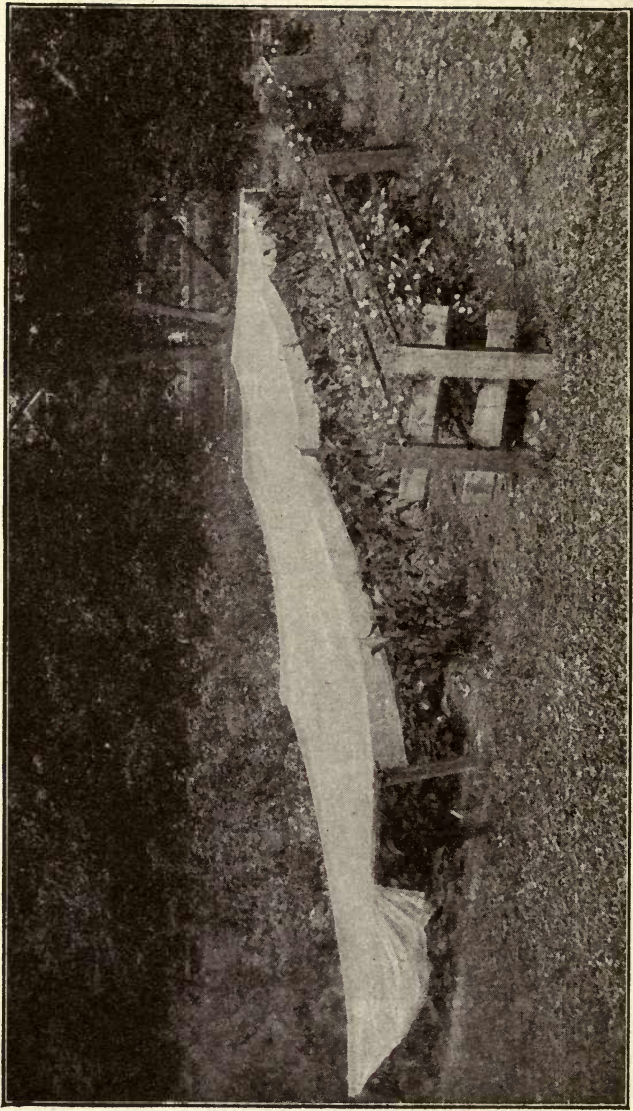
Of course there really isn't any necessity for starting one's plants indoors. Plants already started are sold by the thousands, and can be purchased at any seedstore, and often at grocery stores. Usually, however, the varieties are limited, so that in order to have a favorite kind, the plants may need to be home-grown.

Tomatoes will thrive in almost any soil if it is well cultivated and if plenty of water is given. It used to be believed that the tomato did not require very much plant food, and that the use of manure would produce an excess of foliage at the expense of the fruit; but experience has shown that this is a fallacy. The best results are obtained by using a generous amount of well rotted manure, or, if that cannot be obtained, of a balanced garden fertilizer, with perhaps a little bonemeal added.

After the plants have made considerable growth they can be pushed along rapidly by the use of manure water or by an occasional application of nitrate of soda, a teaspoonful being dug into the soil at the base of each plant.

Tomato plants should be set fairly deep. If they are long and spindling, as is likely to be the case with some varieties, especially the small preserving kinds, it is a good plan to make a trench about six inches long and to bury a part of the stem along with the roots. Stockier plants are made in this way, and new rootlets will be thrown out all along the stem, giving increased strength and vigor to the plants.

If the amateur happens to have a piece of sod land, he can usually grow tomatoes well there if the sod is turned over and deeply buried. There are apt to be cut-worms in such land, however, so that it will be particularly necessary to use collars of some kind, in case paper



pots are not used. They can be made from any stiff paper and should be inserted two inches in the ground extending the same distance above.

The tomato being a particularly thirsty plant, the backyard gardener will get extra good results by placing a pierced tomato can in the ground near the base of each plant, filling it with water each night. This will carry the moisture directly to the roots without waste. If a little manure be placed in the cans, the plants will be fertilized at the same time that they are watered.

Commercial growers let their tomatoes scramble all over the ground, but this practice is not to be recommended for the backyard garden-maker, because too much room is required. It is much better for him to stake the plants or support them by a frame.

The close pruning which is sometimes advocated is not the best plan unless one is trying to grow exhibition specimens. When plants are tied to stakes, however, it is advisable to cut out the suckers and a considerable number of the side shoots. Care should be taken not to break off the flowering stems which appear just at the base of the side shoots. When plants reach the height of four feet the tops may be pinched out. Some practical gardeners like to prune their staked tomatoes rather heavily early in the season, in order to get ripe fruit quickly, and then, as the summer advances, to let the tops grow freely. The branches and leaves hang down over the plants in the fall, giving protection from the early frosts.

If more than a very few tomato plants are grown the pruning often recommended requires much more time than the average backyard gardener can give to the work.

It may be well to grow a few plants this way in order to get early fruit, but the rest of them are more easily cared for if supported by light wooden frames or by barrel hoops fastened to four stakes.

A modified system of staking is also found satisfactory. Cross pieces are nailed to the stakes, and three stems allowed to grow on them in fan shape. A much larger crop is produced this way than when the plants are trained to single stakes, and with less labor. The quality, too, seems to be just as good.

Some seasons tomatoes are very slow to ripen. Those planted in light soil will naturally ripen up more quickly than those planted in heavy soil, but the free use of water will be found a help in any garden. It may be necessary, however, in a cool summer to pick the fruit and ripen it under glass in order to have tomatoes at all early. It is feasible to spread straw in the bottom of the cold frame, and place the tomatoes on it in a single layer, the frame being then covered with glass, but with plenty of ventilation given. The heat from the sun will ripen the tomatoes very quickly. They may also be put in a box and a discarded window sash used over it.

When frost threatens, gardeners often pick off all the nearly ripe fruit and let it color up in the house. If plants are pulled up by the roots and hung top down from the rafters in an attic, they will often keep on ripening their fruit until Christmas.

One of the common difficulties found in growing tomatoes is end rot. This is due mostly to a long period of dry weather and can be prevented only by watering freely.

Most garden-makers have their pet varieties, and different kinds seem to be especially popular in different



Tomatoes Trained on Stakes

sections of the country. Few better early tomatoes can be found, however, than the rather small, round Bonny Best. This is a very prolific and wholly satisfactory tomato which comes unusually early. In sections where a pink tomato is preferred, probably June Pink will be liked even better. It is a very quick-growing sort, too, ripening in 98 days, but, like Bonny Best, is rather small, being about two and one-half inches in diameter. Both kinds are to be preferred to the better known Earliana and Chalk's Early, as they ripen sooner. There is no reason why any variety should be depended upon wholly, although some amateur gardeners always want to grow Stone because of its large size and high quality. One hundred and sixteen days are required, however, to ripen Stone. It is a good kind for fall in a fairly warm season.

Dwarf Champion is usually sold by seed houses which carry started plants, because it makes very stocky, at-

tractive specimens. It is inclined to be rather acid, but makes a fairly good tomato for the backyard garden, and is very easy to grow. It requires 116 days for maturity. Ponderosa is often advised, and some growers are attracted by its immense size. It is a very late sort, however, not very prolific, and generally is not to be grown for its quality. Matchless, Perfection, Marketeer and John Baer are very good varieties.

Backyard Cucumbers and Melons



CUCUMBERS cannot be considered among the necessary vegetables. They are not nourishing, like corn and beans, and cannot be stored for winter, like carrots and turnips. At the same time, they are among the most popular of all garden vegetables, and a few plants should be grown in every garden which is not too limited in size.

Most cucumbers can be trained to climb on strings or a piece of poultry wire, and thus can be trained against the house or over a fence. One very good kind for the home garden is called the Japanese Climbing. It has special advantage over the ordinary sorts in that it is not so greatly subject to blight.

The cucumber is a very tender vegetable, but can be planted with reasonable safety now. Pickling sorts may be planted up to the last of June.

Being rather a heavy feeder, the cucumber should be liberally supplied with barnyard manure, thrown into the bottom of the hills and covered with two or three inches of soil before the seeds are planted. A shovelful to a hill is none too much. It is best to plant eight or ten seeds, having in mind the old rhyme:

"Two for the cutworm, one for the crow,
One for the beetle, and four to grow."

If more than four escape, the surplus should be pulled up. It is important to keep the soil well stirred, taking special care to cultivate after a rain.

As soon as the plants are a few inches above ground, the garden is likely to be invaded by the striped beetle, which often destroys a crop in a few days. To foil this pest it is advisable to cover the plants with boxes having

fly netting over the top, or to scatter tobacco dust, pyrethrum or hellebore on and around the plants.

It is not well to mound up the earth unless the ground is wet, for when that is done the water is drained away and the plants may suffer from lack of moisture. The hills should be made about three feet apart.

Although it is very difficult to combat the blight, much can be done to protect the plants by spraying them with Bordeaux mixture from the time they are a few inches high, making application at least every three weeks.

Davis Perfect is a very good kind for the home garden, although not so well known as the Arlington White Spine. For pickling grow Improved Long Green or the Boston Pickling varieties.

Melons do not properly belong in the very small garden. Yet there are many garden-makers who take more pride in their watermelons and muskmelons than in any other vegetables which they grow. Both crops do best in rather light but rich land, and it hardly pays to try growing them in heavy soil. Like cucumbers, they revel in manure, a shovelful of which should be placed in the bottom of each hill.

Being tender, it is inadvisable to plant the seeds before the weather is warm. Except in the Northern States, planting may be delayed until the first of July, with the result that there will be less trouble from the attacks of insect pests. In the North, however, planting must be done as early as the ground is warm. Indeed, it is a common plan to plant the seeds on inverted sods or in old strawberry baskets set in a cold frame or hot-bed. This makes a crop sure if early varieties are used.

The plants will almost certainly be attacked by the

striped beetle, however, when set outdoors, unless they are given protection in some way. The best plan for the small gardener is to place boxes over the plants, these boxes being covered with fly netting. A perfect protection is provided by this means.

Another good plan is to start the plants outside about ten days earlier than the usual date, covering them with boxes having a light of glass on top. This will give plants almost as early as though started in the cold frame, and when the need of glass has passed mosquito netting can be substituted.

The hills should be from six to ten feet apart. It is well to plant at least a dozen seeds, but to thin the plants to three or four. In some sections much loss is occasioned by a blight or wilt which comes late in the season and ruins the vines in a short time. Very early planting will often make it possible to get a crop before this trouble appears.

In the Middle and Southern States it is possible to grow almost any variety, but farther north early kinds must be chosen. Probably Cole's Early is the best watermelon for the far north. Honeydrop is also a good kind. These are small but very sweet melons. Good muskmelons which can be grown in the North are Jenny Lind, Montreal and Rocky Ford. Dixie is a favorite watermelon in the Southern States, but Kleckley Sweets is a particularly good kind for the home garden.

Twelve Neglected Vegetables



SOME excellent and nutritious vegetables are for some reason ignored by the average garden-maker. Of course, they are not vegetables which should be grown in a large way, but they afford variety and are worthy of more attention than they commonly receive.

One kind is Florence fennel, sometimes catalogued as Finocchio. Wherever Italians congregate it is certain that this vegetable will be found growing, for it is extensively used in Italy as a salad, and also when boiled. In some ways Florence fennel resembles celery. Although the top is entirely different, it has an enlarged leafstalk which is blanched like celery and becomes white and crisp. The flavor is rather sweet and has a slight suggestion of anise. Sow in the open ground in May.

Celeriac can be used to flavor soups, or sliced for a salad. Some people like it as a relish with bread and butter, and others prefer to cook it like turnips. Indeed, this vegetable is sometimes called turnip-rooted celery, because it has an enlarged bulbous root. It may be blanched or not, according to one's preference. Plant in April or May.

Martynias are curiously shaped vegetables with a long hook at one end. They are used chiefly for making pickles and are worth growing where it is difficult to raise cucumbers. Three or four plants will be as many as the amateur will need, and they should be used when small.

Still another very excellent vegetable which is almost wholly ignored is the sugar pea. This pea is grown just like the common kinds, but is eaten like string beans, the pods being broken up and cooked. Sugar peas are very

sweet and satisfactory. Moreover, there is no waste, as with other peas. There are both dwarf and tall varieties. The latter grows four feet high and is exceedingly productive, the pods being from five to six inches long.

Salsify is a very hardy vegetable, and may be left in the ground until spring, just like parsnips. It may be cooked like parsnips or made into a stew. Its flavor is enough like that of oysters to justify its popular name, vegetable oyster. Seed should be sown an inch deep and the plants thinned to five inches.

Another vegetable not commonly grown in New England gardens, although popular abroad, is curly Scotch kale, sometimes catalogued as Borecole. It is used for greens, and its special merit lies in the fact that it is not harmed by frost, being so hardy that it can often be dug out from under the snows of early winter. May is early enough to sow the seeds, and the plants should be handled just like cabbage plants.

The Chinese cabbage, catalogued as Pe Tsai, is growing in favor, yet not one gardener out of five hundred is familiar with it. It may be eaten like lettuce or boiled for greens, and it is excellent either way. If started too early the plants are likely to go to seed. The middle of June is early enough to plant the Chinese cabbage.

Leeks are preferred by some people to onions, being very mild and tender. The seed should go in an inch deep. It is important to transplant the seedlings when eight inches high, setting them six inches apart in the rows, and so deeply that the neck will be partly covered. As cultivation proceeds during the summer a little more earth may be drawn around the plants to blanch them.

Probably kohlrabi is better known than most of the

other vegetables mentioned, and yet it is not grown as freely as its merits warrant. The bulb, which is eaten, grows on a stalk a few inches above ground, and is cooked like turnips. In order to have a succession seeds should be sown every two weeks up to the last of June.

Brussels sprouts are miniature cabbages which more amateurs ought to know, for they have a flavor all their own. They grow up and down a long stalk, and if the gardener has been successful with them the sprouts will need all the room there is by the first of September. Then the leaves will be in the way, and the garden-maker can help out by breaking off the lower leaves. It isn't necessary to be in a hurry about this, and the plants grow better when they have plenty of foliage. Even when most of the leaves have been broken off a rosette must be left at the top, for unless there is some foliage the plants will not survive. Brussels sprouts are hardy enough to stand considerable cold weather. They can also be taken into the cellar, root and all, and set in boxes of earth. If this plan is followed with plants on which sprouts are only partly developed, the crop will be carried well into the winter.

When speaking of okra as a neglected vegetable, it must be with a reservation. In the Northern and Middle States it is seen only occasionally, but in the South it is very common. Okra is the vegetable which figures prominently in chicken gumbo and similar soups. The edible part is the pod. Okra will grow in practically any good garden soil, but should not be planted until the ground is warm. The plants grow two feet high or more. Of course only a few plants are needed to give all the pods wanted. These are prepared for winter use by being

hung up in the fall and allowed to dry, but they may be cut into short lengths and added to soups any time in summer after they reach a fair size.

Broccoli is a vegetable which much resembles cauliflower but is easier to grow in some soils. It is very largely grown in England for the market and is an excellent vegetable, although the head is not so large as that of cauliflower. The seed can be sown outdoors in May, and the plants cultivated in practically the same way as cauliflower plants.

Miscellaneous Vegetables



NOBODY will claim that radishes are of great value in meeting a food shortage, but they may be considered as an appetizer, and whatever provokes the flow of gastric juice must have some merit. It can be said for radishes that they do not encroach upon any garden space which is needed for more important crops, as they can be grown in the rows with other vegetables, where they serve a double purpose. They mark the rows so that cultivation can begin before the longer-growing plants come up, and when removed can be used on the table. It is a mistake to devote rows of any length wholly to radishes, at least in the backyard garden.

Radishes, being hardy, can be planted as early as the ground can be worked, which means that they can go in along with carrots, parsnips and salsify. The extra early kind are the small red sorts which are exceedingly popular in the spring. A half inch under the ground is deep enough for the seed to go. When grown alone, the plants should stand about an inch apart, but when used to mark the rows of other crops, they should be two or three inches apart.

The small kinds of radishes are best adapted to spring use. After the middle of May or first of June it is much better to sow the long kind, as they stand the hot weather better and keep in condition for eating a much longer time. The round and olive-shaped sorts become tough in a week, but their larger cousins are good for two weeks or even more. Perhaps the two varieties to choose for midsummer planting are White Icicle and Long White Vienna, with Long Scarlet Short Top in case one objects to white radishes. A discussion of win-

ter radishes will be found under the title of "The Root Crop Quintet."

Parsley is also a non-essential crop, yet seems to fill a need in every household. Fortunately it requires but little room, and may even be used to advantage as an edge for flower beds, because of the attractive foliage. One fact likely to be overlooked by the novice is that parsley seed germinates very slowly. Unless care is taken the plants are likely to be crowded out by the faster-growing weeds. Sometimes a month or more will elapse before the seedlings will appear. It is a good plan for this reason to use a few radish seeds to mark the rows so that cultivation can be begun promptly, and also to soak the parsley seed in warm water over night, which will hasten germination. Some people put a little seed in a bag and bury the bag in the ground for a few days after dipping it in water. Parsley is a favorite garnish plant, and may be kept through the winter by taking up a few roots and setting them in boxes to be kept in a sunny window indoors when fall comes.

By all rules of economy the pumpkin should be excluded from the backyard vegetable garden, because of the large amount of space it demands. By exercising a little ingenuity, however, the garden-maker may find a way to grow pumpkins without infringing seriously upon the room which belongs to other crops. It is quite possible to train the vines over a fence or on a lattice work, or to plant them along the side of the garden and let them grow out over the lawn. A few pumpkins will be treasured for pies when fall comes. Probably the best variety for the amateur is Winter Luxury, which cooks well and keeps well. The little Sugar pumpkin is also ex-

cellent for making pies, and the little Jap called Chirimen is growing in favor.

A very good substitute for meat dishes consists of fried eggplant. It is true that the eggplant is not an especially easy vegetable to grow, and yet if good strong plants can be purchased and set out as soon as danger of frost has entirely passed, there is no reason why the veriest tyro should not grow this vegetable with success. It is best to set the plants about two feet apart in the rows, and to have the rows three feet apart, as they require considerable space. It is well to remember, however, that it is useless to try to grow eggplants in wet or very stiff soil. They will grow almost anywhere else, but cannot tolerate wet feet.

Fresh manure is to be avoided when the plants are set out, but a little bonemeal may be worked into the soil to advantage. In the absence of this fertilizer, a little sheep manure will serve. The eggplant responds quickly to good cultivation, so that the soil should be stirred at least once a week. Eggplants are likely to be attacked by the potato bug, but with a few plants these pests can easily be knocked off into a can of kerosene. Black Beauty is a good variety of eggplant, and a dozen plants will be sufficient for the average garden.

Of course peppers are a secondary crop, and yet there is no reason why a few plants should not be found in every amateur's garden. They can be purchased and set out at the same time as the eggplants. The peppers will thrive under the same conditions as have been outlined for the growing of eggplants, although they do not require so much room. If they stand fifteen inches apart in the rows, that will give them space enough, and the

rows need not be more than two feet apart. It is very important to cultivate frequently, both to keep down the weeds and to keep the soil loose. Perhaps the best early sweet variety is Bull Nose. Chinese Giant and Ruby King are both well-flavored early kinds. Neapolitan is also a very mild early variety. Cayenne is commonly used for pickling, and so are the squash- and tomato-shaped varieties.

Chervil is an aromatic plant which, although not commonly known in this country, is well worth growing in a small way, especially by people who like to have their food well seasoned. It grows much like parsley, but soon runs out, so that seed must be sown every two or three weeks to keep a succession. Chervil is chopped fine and added to salads and other dishes. It is particularly good when scattered over buttered potatoes. The crop is ready in five or six weeks from planting.

Many people are fond of chives because they add a delicate piquancy to various made dishes, suggesting onions, but much milder. It is the top of the plant which is used, it being chopped fine and added as needed. Chives are perennials, and when once started go on growing for several years. Seed may be sown in the open ground in May. Of course only a very short row will be needed, but it is well to have a few extra plants to dig up and take into the house when winter comes. Started plants can be bought of seedsmen in the spring.

Making a Vacation Garden



HUNDREDS of people who live in the city and go to the seashore or the country to spend their summers might have a small vegetable garden and thereby add to the nation's supply of food. The exodus from the city usually begins about the end of June, and of course that is too late for the planting of long-season crops. There is no reason, however, why an abundance of beans, beets, turnips, carrots, kohlrabi, radishes and various salad plants should not be grown.

Tomato plants may still be purchased, too. They will commence bearing before the vacation season is over, if good-sized plants are obtained. It may also be possible to buy cabbage plants, lettuce plants, and even turnip plants. Of course only short rows will be needed unless the owners have facilities for storing the crops at home, in which case they can grow a more generous supply of beets, carrots, kohlrabi and turnips.

Although kohlrabi grows above ground, it much resembles the turnip, and can be stored in sand the same way. It is an ideal vegetable for the vacation garden because of the quick growth which it makes. The beets and turnips will provide greens as well as root vegetables, because the tops are excellent when cleaned and cooked. Swiss chard will mature sufficiently to provide a good supply of greens before the end of the vacation if seed is planted the first of July.

It may even be possible to grow sweet corn in the vacation garden, if a dwarf variety like Golden Bantam is planted. Golden Bantam will mature in eighty days, so that, if the summer home is occupied until the end of September, a crop can be harvested.

Almost any kind of bush beans can be planted in the vacation garden, but probably the variety known as Six Weeks is the best of all, unless an early planting can be made. Somewhat more than six weeks may be required to grow beans large enough for eating, but the variety is remarkably early.

It is hardly worth while for the man making a vacation garden to put in pole beans, although he may perhaps get satisfactory results by using a few hills of Lazy-wife. Of course much depends upon the length of time which is spent at the summer home.

Radishes can be grown the quickest of any garden vegetables, but only short rows should be planted at a time, as the early varieties are not good unless gathered when young. The French Breakfast is ready for use in twenty-five days from the time the seed is planted, and is a very good early variety. It is well to put in a row of White Icicle and Long White Vienna at the same time. The former will come along about ten days after the French Breakfast is ready for the table, and the Long White Vienna will follow a few days later. White Icicle and Long White Vienna do not get tough and unpalatable so quickly as the earlier round varieties, and can be used almost as long as they last.

It may be a little difficult to grow good lettuce, but if one can find a spot where protection from the hot sun can be secured at midday, and will plant a hot-weather variety like Salamander, a fairly satisfactory crop can be raised from seed. Perhaps the best plan is to make a planting of the well-known loose-leafed lettuce known as Grand Rapids, and to use the small leaves as soon as they are large enough. If plenty of water is given, and

the ground kept well worked, this lettuce will do fairly well even in hot weather.

It is well to remember in planting the vacation garden that the seed should go in much more deeply than early in the season, because the ground is likely to be dried out at the surface, and it will be necessary to get down to where there is moisture. It is also important to thoroughly firm the earth over the seed with the foot or hoe.

Growing Vegetables to Can and Evaporate



IF THE home garden is properly managed it will supply a never-ending succession of vegetables from one end of the year to the other. This does not mean, of course, that they will be fresh vegetables at all times. Stored vegetables ought to last until spring, but the number which can be kept in this way is limited. Canning and evaporating are the twin sisters which make the backyard gardener largely independent of the market man.

The desirability of growing vegetables to be canned and evaporated is too often overlooked, yet this is one of the most effective ways by which the nation's food supply can be conserved, and conservation is a worthwhile matter in times of peace as well as war. This plan calls for the growing of a surplus above what will be needed for summer use. Many of the most popular vegetables can be included, with sweet corn, beans and peas at the head of the list.

There is no better corn for canning than the popular Golden Bantam, although Stowell's Evergreen and Potter's Excelsior are excellent for the purpose. Stringless Green Pod is perhaps the best string bean for canning, but Kentucky Wonder, a pole bean, is exceedingly productive and its pods are tender. Kentucky Wonder Wax has the same characteristics as the better known variety.

A particularly large planting of beets can be made to advantage, for the tops as well as the beets themselves can be canned for winter. Few people seem to realize that they can put up spinach for winter use. Yet it is very easy to can, and it should be used more freely than

it is. Swiss chard can be canned, too, besides providing greens all summer. This is an extra good vegetable for the small garden.

Many people have no facilities for keeping squashes and pumpkins through the winter, but there is no reason why these vegetables should not be canned. The same statement applies to the English vegetable marrows. Nothing is easier to can for winter than rhubarb, for it will keep if simply sealed in a jar of cold water. Dandelions and string beans will keep for months if placed between layers of salt in a crock.

It is hardly possible to have too many canned tomatoes, as they are indispensable in making soups and bisques. Perhaps there is no better tomato for canning than Stone, but the plants should be set out early, as it is a late variety.

The use of the evaporating machine has become very general of late. The old practice of drying vegetables in the oven or in the sun is still followed, of course, but modern evaporators greatly simplify the process. It is well worth while growing a surplus of vegetables with the special purpose of evaporating them. There is no easier, cheaper or more satisfactory way of conserving the garden products. Evaporated vegetables may not be quite equal to those which are canned, but they are more certain to keep well, and the cost of the work is much less, for there are no jars to buy. Peas, corn, beans, cherries and strawberries can be evaporated in a few hours. Even pumpkins and squashes may be treated in this way, and pies made of the evaporated product cannot be distinguished from those made from fresh pumpkins. Stringless green pod beans evaporate particularly well if

they are young and broken into pieces about an inch long. Lima beans must be gathered before maturity and blanched from five to ten minutes. Peppers can be dried whole or split on one side to remove the seeds. Sometimes they are first steamed until the skin is softened.

Any varieties of peas evaporate well, and it is advisable to make a particularly large sowing of the later varieties, which are sweeter than the early smooth peas.

Detroit Dark Red beets are among the best kinds to grow for evaporating, and can be planted as late as the first of July. The beets should be selected when young, and they are best when quickly grown. This variety grows tops which are especially good for greens, and they, too, may be evaporated.

Some carrots are not very satisfactory when evaporated because of their woody cores. Chantenay, however, is free from this fault.

When corn is to be evaporated, it should be chosen when young and tender, and cooked from two to five minutes before the kernels are cut off and spread on the trays. Golden Bantam is a good kind if one likes yellow corn, and Stowell's Evergreen is among the best large white varieties. Country Gentleman is not recommended as a variety to grow for winter use.

The evaporator is a great help to people who live in towns and cities where storage room is at a premium. It sometimes happens that people who are able to own fair-sized gardens have no suitable cellars in which they can store their winter vegetables. In time some sort of municipal storage plant may be worked out for the benefit of such people, but in the meantime the evaporation process offers the best means by which to keep their sur-

plus vegetables for use during the winter. Vegetables which have been evaporated occupy but very little space, as most of the water has been removed, and it is the water which gives them their bulk.

One good point to remember is that evaporated vegetables must be stored in packages which will exclude flies. Certain flies lay eggs which hatch out maggots, and if they gain access to the stored products the latter will be damaged or ruined. Paper bags which have been dipped in paraffine make excellent receptacles. They may be tied at the mouth and hung from the rafters in the garret, perhaps. Pasteboard boxes, and particularly the boxes in which bakers' crackers and cookies come, make desirable receptacles, especially when wax paper is used inside.

There are several evaporating machines on the market, some of which cost only a few dollars. It is quite possible, too, to improvise home-made evaporators which will do excellent service. Bulletin No. 841, which can be obtained free by writing to the Department of Agriculture, Washington, D. C., describes evaporators of many kinds, and gives detailed instructions as to their use.

Vegetables in the Flower Garden



ALTHOUGH many flower gardens have been given over to vegetables since the outbreak of the great war, it is not necessary for the garden amateur to give up flowers altogether, even though his aims are mostly utilitarian. There are many vegetables quite handsome enough to be grown for ornamental purposes.

The martynia, for example, which makes an excellent substitute for cucumber pickles, has a flower which is as handsome as some orchids, and occasionally is grown as a flowering plant. Okra has an extremely pretty sulphur-colored flower.

The scarlet runner bean is better known for its flowers than as a desirable vegetable in the United States. It is a very popular bean across the water, and might well be planted very freely in home gardens this year, being made to climb on the fences and the porches all around the houses.

Then there is the sugar pea, or edible-pod pea, a delectable vegetable which is prepared like string beans, and has a blossom rivaling that of the sweet pea.

The variegated kale is very handsome when well grown. Carrots sometimes are grown in flower beds, even in normal times, for their attractive foliage. The decorative value of parsley has long been recognized, too, the plants often being used for edging.

There is no reason why pumpkin vines should not be made to grow over ugly walls and fences instead of merely ornamental vines. They make good screens, and if a shovelful of manure is placed in each hill at planting time enormous leaves, as well as many attractive yellow blossoms, will be produced.

One of the handsomest flowers which grow by the roadside is the chicory blossom. The flower of Witloof chicory is practically the same as that of the wild variety. Although the plants will not flower the first year, a few specimens may be left in the ground in the fall when the crop is gathered for forcing in the cellar, and they will beautify the garden next season. No more charming shade of blue can be found in the garden than that of chicory.

Jerusalem artichokes have attractive blossoms, are excellent for food, and will grow in almost any soil.

Not a little would be added to the common larder if scarlet runner beans were made to grow over the porches all along some of our shores. Even the little beds usually given over to geraniums and salvias might be used for beets and carrots on the principle that every little helps. It is quite possible to be patriotic even at the seashore.

When to Pick the Vegetables



MOST garden vegetables cannot be had at their best unless they are harvested at just the right time. In the case of peas and beans two or three days may make a big difference. This also applies to string beans, for many varieties are likely to become stringy after they have reached a certain age.

String beans are at their best when they snap readily and have soft, pliable tips. Shell beans must be left, of course, until the pods are well filled; but if they are allowed to dry on the vines production will cease. This is an especially important point with pole beans, for if the beans are kept picked the vines will yield to the end of the season, unless, unfortunately, they succumb to rust or blight.

Potatoes may be dug as soon as the vines begin to dry out, although they will keep on growing for some weeks after, and only a few should be harvested at a time.

Many amateurs seem to think that the acme of skill has been acquired when they produce a head of lettuce which is as solid as a cabbage. As a matter of fact, the small young lettuce leaves make much better salad. Across the water the young plants are chosen by preference, while it is customary in this country to wait for full heads, which often means old lettuce. Any lettuce which has been growing a long time is very apt to have bitter outside leaves. Likewise, the large end of the midrib is often bitter, and it should be broken off as a precaution.

Kohlrabi, which is one of the easiest crops to grow, is often allowed to get too old because it matures very rapidly. With frequent plantings a supply of just the right age can be kept coming along all summer. Kohlrabi

must be eaten before the skin hardens, which means before the bulb gets as big as a baseball. Indeed, it may be eaten when half as large. Radishes also depend upon early picking to be good.

Swiss chard is ready for the table when the outside leaves are a foot high, although it is well to cut lightly at first in order that the plants may keep on growing rapidly. When near maturity the outside leaves will have large midribs, which can be cut out and used as a substitute for asparagus, the rest of the leaves being boiled like spinach.

Although many beets will be grown to full size for winter use, they are at their best for the table when young. Beet greens to which the young beets themselves, about an inch in diameter, are clinging, make a dish not easily rivaled.

Young carrots are also especially good, and they should always be harvested young when they are intended to be used for soup.

The earlier sorts of cabbages are ready when three-quarters headed, but it is always well to leave Brussels sprouts until after a frost.

Summer squash must be picked before the shell hardens, and marrows are at their best when not more than two-thirds grown. But those that get old should not be discarded, as they may be used for making pies, while the rind makes an excellent preserve.

The time to pick melons is when they crack around the stem, for then they will part from the vines without being pulled hard. In the home garden melons can be allowed to ripen much more thoroughly than when they are grown commercially, and they are never so good as when they

are ripened on the vines until they attain full color and flavor.

Sweet corn loses fifty per cent of its sugar content in a few hours from the time it has been picked. Consequently nobody can enjoy sweet corn at its best who buys it at the stores. The time to gather the corn is when it has just come into the milk. This is generally indicated by the silk turning black. If one is in doubt, a slight opening can be made in one end of the ear to see how the kernels look.

People who have never tried steaming instead of boiling their sweet corn have a new experience waiting for them. About twice as much time is required to steam as to boil the corn, but as it takes only about twenty minutes over a good fire, the extra cost of fuel is insignificant. Many people like to boil or steam the corn with the inner husk left on, which is also an excellent plan.

Lima beans are at their best if picked while still green. The way to determine the exact condition of the pods is to press the blow end between the thumb and forefinger. If it feels spongy you may be sure that the beans are full-grown and ready for the table. If, on the other hand, it is hard, that will be a sign that the pod still contains material to be absorbed by the bean. When the pods have begun to turn yellow the beans have passed their prime. Then they should be allowed to ripen on the vines, being picked as soon as ripe and dried a little more by being spread in a warm room in the sun. They can be kept in a tin box or a paper bag for winter use.

Storing the Winter Vegetables



IN THE old days, before the coming of furnaces and steam heaters, the average cellar was a satisfactory place for the storage of most vegetables. Nowadays the average cellar is too warm for this purpose. Many householders have therefore given up trying to keep vegetables over winter, but now that we have learned the necessity of food conservation everyone who has a surplus of garden products, or who can buy winter vegetables cheaply from neighbors or at community markets, will realize the wisdom of providing suitable quarters for storing each fall a sufficient amount to last him and his family until gardens begin to bear again.

There are several ways of making a vegetable cellar. One way is to erect a partition between two parallel walls. Another way, and often the most satisfactory, is to put up such a partition across a corner. A double board wall may be used, with 2x4 timbers for uprights.

The walls may be insulated by filling the space between the boards with cork, sawdust, shavings or, best of all, dried seaweed. Almost as good results can be obtained by fastening the material known as sheathing quilt to the boards.

Of course ventilation will be required, and this is provided most easily by means of a cellar window, preferably with a wooden shutter on the outside of the frame.

If one wants to make an even more satisfactory storage cellar, he can use bricks to make the double wall, or, better still, hollow tiles. With the tiles only a single wall will be needed. It is not necessary to have a floor on the storage cellar. An earth bottom is to be preferred for storing such vegetables as potatoes and onions.

It is important, however, to have all storage quarters rat-proof, and that may require putting in a concrete floor, although rats will be kept out if the walls extend far enough below the level of the cellar bottom.

Different kinds of vegetables require somewhat different treatment, but most sorts will keep fairly well in a cellar constructed after the manner outlined, provided a temperature between 32 and 40 degrees can be maintained.

It may be desirable to store the squashes and pumpkins in the outside, or furnace cellar, either in crates or on swing shelves. They require a higher temperature than most products of the garden.

It is usually wise to close the windows during the day and open them at night until the weather gets cold. In this way a more even temperature is maintained.

Unless carrots, beets and other root crops are stored in sand, you should have a little moisture in the cellar, or they may become dried through. Usually it is sufficient to keep a pail of water on the floor. Moisture is also required for a cellar where apples are stored.

Parsnips and vegetable oysters may be left in the open ground. After the ground freezes a little, one may, if desired, dig a small amount to be used during the winter. It is best, however, to keep these two vegetables largely for spring use.

There is no better way in which to store a small amount of beets, carrots, turnips and kohlrabi than to pack them in boxes of sand in the cellar. It may be feasible to make outdoor beds according to plans gotten out by Government and State experts, but in any case it will be advisable to store a considerable number of vegetables in sand in

the cellar because of the ease with which they can be obtained when they are needed.

A few cabbages can be kept in barrels of sand in the same way, except that it is wise to slightly moisten the sand at intervals. The only proper way to keep most of the cabbages is to bury them head down in trenches in the garden, the roots being allowed to project through covering of straw or hay, on which earth may be piled as the weather gets colder.

Frozen cabbage will keep all right until it begins to thaw. It is the alternate thawing and freezing which makes it spoil. When stored in covered trenches as described it will usually freeze and stay frozen until spring, but heads may be taken out when a period of warm weather comes.

Great care must be taken in harvesting all the vegetables. Even a small bruise will make a squash rot, and if the tops of the beets are cut off closer than an inch from the beet itself, bleeding will result.

There is no reason why eggplants should not be taken into the house if fairly well matured specimens are on the vines. They can be kept for a long time if placed on a rack or shelf in a light room where the temperature is well above freezing. They should not touch each other when in storage, and it is important that they be handled as carefully as eggs, for if they are bruised rot is almost certain to set in.

Melons and cucumbers are easily routed by Jack Frost, but it is not necessary to lose all the crop. If before freezing the melons are cut with a little of the vine attached, and hung up in a sunny place, many of them will mature.

If there happen to be any marrows in the garden which have grown too large to be used on the table, they should be taken into the house before a hard frost comes, because they make delicious pies.

A thoughtful study of the foregoing suggestions together with those on canning and evaporating given in a previous chapter will double the satisfaction as well as the profit which the amateur gardener may derive from his efforts in food conservation.

A Garden in the Cellar



A VEGETABLE garden in the cellar may seem a little unusual, but there are half a dozen crops which will flourish in a box of earth set beside the furnace. One of the best of these winter vegetables is *seakale*. It is grown by covering the roots with earth and keeping the box in which they are planted in a rather dark place. If the cellar happens to be well lighted a second box, with holes bored in it for ventilation, may be inverted over the first. No cultivation is needed, but the application of a little water occasionally will keep the crop growing. When the stalks which the roots throw up are a few inches high, they may be cut for the table, and they will be found a most delicious salad. If roots have not been grown in the garden, they may be purchased at a small price ready for forcing.

It is a perfectly simple matter to have asparagus all winter if one has even a very small cellar, provided that it is heated. Old asparagus roots may be dug up at any time in the fall and transplanted in boxes of earth. Then, if kept well watered and in a warm place, they will soon throw up edible stalks. If the garden-maker will dig an extra supply of roots and keep them in a cool place until wanted, there is no reason why he should not have asparagus until the outside crop comes in the spring.

Perhaps the easiest of all the vegetables to force during the winter is *rhubarb*. It is necessary to have old, well-established clumps to begin with, but otherwise little difficulty is experienced in getting strong, well-grown stalks, which will make delicious pies in midwinter. Clumps should be dug in November and allowed to freeze hard before being taken indoors. They should then be stored

in a cool cellar, and a few planted at a time in a box of earth or sand, or even set on the cellar bottom in a pile of ashes. The growth is made from the nourishment stored up in the roots. A temperature of about fifty is best, and the cellar should be kept moist.

The best stalks are grown when the cellar is comparatively dark, because then they are nicely blanched, and have only small leaves. If necessary, a box with holes bored in it for ventilation may be set over the plants, or a corner of the cellar may be curtained off with old quilts. Extra large, vigorous shoots are obtained by using a little fresh manure under the clumps. The stalks should be ready for use in about six weeks from the time the roots are planted, and it is not advisable to commence forcing clumps much before the first of the year.

Although less well-known, Witloof chicory can be forced just as easily, and is even more useful for winter. Witloof chicory is a sort of glorified edition of the common chicory of the roadsides and has the same kind of blossoms. It produces much better stalks, although common chicory can be used if nothing else is obtainable.

The seed of Witloof chicory can be obtained at any seedstore and it should be planted in May. A short row will give a sufficient number of plants. When late fall comes the plants should be dug up and stored in a cool cellar, several of them being started at different intervals. They will do well in a box containing ordinary garden loam, and the crowns should be covered with about four inches of sand.

Of course the tops which grew in the field will have been cut off when the roots are taken inside. The new tops which will push up through the sand will be creamy-

white and very tender. Served with French dressing, they make a delicious salad. It is really the French endive which is sold in the restaurants and high-class hotels at a high price. In ordinary times most of the French endive used in this country is brought from Belgium, but it can be grown just as well here, and there is no reason why it should not be found in every amateur's garden. If the stalk which grows through the sand is not cut too close to the roots, a second and even a third growth will be made. A cutting can be had usually in three or four weeks from the time forcing is started, if the cellar is reasonably warm. It is not absolutely necessary to have sand over the plants, but in its absence a box should be inverted over the one which contains the crowns.

Few people realize that the common dandelion can be forced in the cellar during the winter. It is a fact, however, that it makes a very good salad plant, although with quite a different flavor from the greens grown outdoors. Plants should be dug up, roots and all, before the ground freezes, and a good two inches of the tops cut off. Then the roots may be set in a box of earth, or in good garden soil spread on the cellar bottom. If grown in the dark the tops will be almost white. Of course, when a box is used this is easily accomplished by inverting another box over it. The second box, however, should have several holes for ventilation. A warm cellar is needed, and it is well to set the roots near the furnace.

Most housekeepers are fond of chives, an excellent plant for flavoring certain dishes. It tastes something like the onion, but is not so strong. Chives are perfectly hardy, and will live on in the garden for many years, so

that there is no lack during the summer. It is almost as easy to have chives ready for use all winter if one or two plants are dug up before the ground freezes hard and planted in a box or pot. The plants will keep on growing until spring if placed in a sunny window and occasionally watered.

The Backyard Flower Garden



ONCE there was a woman who demanded a flower garden in the back yard. "The place for flowers," replied her husband, "is in front of the house." "No," insisted his wife, "I want them where I can see them myself."

There really is no reason why flowers should not abound all around the home. Certainly they should not be reserved for the front lawn. Rosebushes and other climbers may well have a place on the back porch, with nasturtiums or other annuals climbing on the fence.

There ought to be a real flower garden as a part of the home, if room for it can be found. If the lot is small, flowers and vegetables can be grown in close juxtaposition. Gladioli and dahlias, for example, may be used as borders around the garden. Peonies and iris may be used to make a permanent bed at one end, and sunflowers will add to the beauty of the lot, while providing food for the chickens.

One very attractive plan is to locate a vegetable garden in the middle of the plot, with a grass walk all around, and a hardy border on all four sides outside the walk. This border should be about four feet wide, and given over to perennials which are hardy, thrive with comparatively little attention, and give a long season of bloom. In the list might be included such flowers as columbine, phlox, campanula, gaillardia, larkspur, peonies, Oriental poppies, Sweet William, hardy chrysanthemums, fall asters, Shasta daisies, helenium and yucca. If one has a fence around the garden, it will be a little more difficult to carry out this plan. Some of the tall perennials, however, like hollyhocks, Canterbury bells, larkspur, fox-

gloves, monkshood, hardy sunflowers, and the fall asters, can be used at the back, with low-growing flowers at the front.

If a part of the garden is shaded most of the time, the perennials to use there include most of the lilies, columbine, coreopsis, foxglove, cardinal flowers, monkshood, Canterbury bells, larkspur and Japanese anemone. Almost all flowers need a few hours of sunshine each day, but the tuberous-rooted begonias, lilies of the valley and violets will do fairly well in very shady places. Of course the begonia is not hardy, and must be taken up in the fall.

Annuals that will grow in partial shade are evening primroses, balsam, torenia, clarkia and pansy.

While one is waiting for perennials to develop, or if one lives in a hired house, annuals may be used freely. Good kinds to grow include asters, calendula, four-o'clocks, lavatera, lupines, petunias, scabiosa, salvia, sweet peas, wallflowers, zinnias, cosmos, spider plant and helichrysum. If the soil happens to be very poor use cockscomb, godetias, portulacca, snapdragon and the sand verbena. Portulacca is the best annual for a very hot, sandy situation. To make a quick-growing annual hedge along a patch or to border beds, there is nothing better than the summer cypress or kochia. Most of the annuals mentioned will flower freely from seed sown out-of-doors early in the season. A few kinds, however, like asters, petunias, salvias and snapdragons, are better started indoors late in March. The quickest-growing annual is the lupine. Seeds sown in April or May will give blossoming plants in six or seven weeks.

Perhaps the flower border at the end of the garden can be devoted to roses. It will be necessary, however, that

the roses have full sunshine practically all day, and that the ground be made very rich. Set the plants about two feet apart, and be sure that the grafts are two inches below the surface. Some of the best varieties are these:

Pink—Jonkheer J. L. Mock, Killarney, Lady Ashdown, Madame Caroline Testout, Madame Chatenay.

Red—Gen. MacArthur, Gruss an Teplitz, Baroness Rothschild.

White or Blush—Bessie Brown, White Killarney, Frau Karl Druschki.

Yellow—Madame Ravery, Mrs. Aaron Ward, Mrs. A. R. Waddell.

Climbers—American Pilar, pink; Dorothy Perkins, pink; Excelsa, red; Hiawatha, scarlet; Silver Moon, white.

Short Cuts for Home Gardeners



WHEN difficulty is experienced in sowing very small seeds, it will be found a good plan to mix the seeds with about five times their bulk of fine and perfectly dry sand. The mixing must be done thoroughly, and then the sand and seeds distributed along the rows. No covering will be needed if the seeds are pressed into the ground with a board or the flat back of the spade. Too deep planting is the cause of many failures.



Perhaps the average backyard garden-maker does not know that if he cuts off the heads of his cabbages, instead of pulling up the plants by the roots, new leaves will be thrown out in a short time. It is a good plan to adopt this practice with the early cabbages, as the second growth of leaves can be used in the house, and they are especially desirable for feeding the family flock of hens.



It is well to remember that the earliest onions are not commonly good keepers, for which reason they should be eaten first. They should be pulled with long necks, and hung up in a dry, cool place for a few days, when they will be ready for the table. Most of the white varieties are the quickest to spoil. The red onions are the best keepers, with the yellow varieties next. Bearing that fact in mind, the gardener will be wise to eat them in the order named.



It pays in the home garden to place short pieces of board under both the muskmelons and the watermelons, or else to stand them on end. When this is done the fruit

will ripen much more uniformly, and there will be less danger of early decay, while wireworms will not have an opportunity to eat into the skin. Moreover, the fruit will look much better when cut for the table.



With a little care many of the garden crops can be kept growing long after the first hard frost. It is only necessary to have a liberal supply of hay or straw on hand to throw over the plants when cold nights come. It is particularly easy to keep lettuce well into October by this method. Strips of cloth and paper may also be used in a small way. If one has a few late eggplants, they can be carried along by covering the plants with barrels when frost threatens. A little fall strategy like this is well worth while.



It's a great advantage to have all the garden crops properly marked, so that a record can be kept of the results. The most satisfactory marker is made of cypress dipped in white-lead paint, and written upon before the paint is dry. Such labels will remain legible throughout the season.



When gathering ripe pepper pods there is some danger of sustaining painful burns if the juice comes in contact with the flesh. In that case the irritation may be relieved by washing the hands in sweet milk. Of course the best plan is to wear gloves.



In order to have the garden complete it should contain a small patch of herbs, which can be planted from May 1 to May 15. Some, like thyme and sweet marjoram, have

very small seeds, which should be barely covered with earth. Other kinds, such as summer savory, dill, fennel, sweet basil and lavender, have larger seeds, which can go an inch under ground. Most herbs are right to dry just before they flower, when they are full of juice. They should be gathered on a dry day. The best way to cure them is to spread the stalks on brown paper laid in a flat pan, which can be placed in a moderately hot oven. It will be necessary to turn them often to keep them from burning, but the quicker they can be dried, the better. When drying has been completed, the stems may be removed and rubbed to a powder. Then this powder should be stored in some tight receptacle.



The garden-maker who keeps a flock of hens should plan to raise enough greens to feed them through the summer, and enough vegetables to last the winter through. A single row of dwarf Essex rape will go a long way. If the leaves are gathered when large enough a new crop will be made, so that there will be a continuous supply. Swiss chard has the same habit of growth, and the hens like it. In the fall there are likely to be many small and poor cabbages which the hens can have. If Scotch kale is planted in July, it can be fed as late as December, not being injured by frost. Among the vegetables to grow for the hens to eat in winter the best are common red beets and mangel wurtzels. Cabbages are often grown especially for the hens, but are hard to store.



Many people seem to think that the English scarlet runner bean is good only for ornamental purposes. Truth

to tell, it makes a first-class vegetable, and in England it is grown commercially to a large extent. If there is a fence, a lattice work or a chicken yard on one side of the garden, it will be an excellent plan to train these scarlet runner beans over it. They will occupy no space needed for other crops, but will produce a large amount of valuable food, besides making the garden gay with color.



If the garden-maker cares to try growing a few extra early potatoes, he can sprout the seeds in the cellar or a sunny room, and thereby gain ten or fifteen days. After cutting the seed potatoes in the usual way, the pieces should be dusted with sulphur in order to prevent excessive evaporation. Then they should be spread in shallow boxes with the eye up, and kept in a dry, frost-proof place until fairly good-sized sprouts have been made. When the seed is planted out, great care must be taken not to break off the sprouts.



An excellent tool for mixing fertilizer with the soil in the furrows before sowing the seed has been devised by a practical garden-maker. It consists of a block of wood about sixteen inches long and four inches square, into the sides of which about fifty three-penny nails are driven at equal distances apart. A staple is then driven into each end. A weight is fastened by a short string to one staple, and a long cord to the other. The little fertilizer and soil-mixer is then dragged along the furrows by means of the string. It does much more efficient work than can be accomplished with a hoe.

Each Month's Work



OF COURSE it is impossible to be exact about the work to be done in the different parts of the country. Some latitude must be allowed for climatic differences. As a rule, however, the same work can be done in the Northern as well as the Middle States in any given month. Accordingly, only two divisions are made, North and South. The line of separation can be drawn roughly through Northern Virginia, Tennessee and Southern Mississippi.

The Southern calendar has reference to the more northerly sections, and work can therefore be begun earlier farther south.

JANUARY

In the North—January is the month to make the garden on paper. No garden is properly made unless it is carefully planned in advance, and the coming of the catalogues indicates that the planting season is close at hand.

Order seeds, fertilizers and such tools as will be needed. Get out the garden tools which you have and see if they need repairing, cleaning or sharpening.

In the South—All the preliminary work discussed in the paragraphs above should hold good in the Southern States.

Begin planting smooth peas and broad beans as soon as the ground is in condition to work. Radishes and lettuce can be sown late in the month. In the extreme South potatoes may be planted.

Set out onion sets.

FEBRUARY

In the North—If the garden is level, and you can buy manure, spread it on now. It is cheaper now than it will be later.

Place headless barrels over a few plants of rhubarb and heap fresh horse manure about them. Partly cover the top of the barrel. This will give extra early stalks.

Get the material ready for starting hotbeds. If no place has been prepared, spread fresh horse manure to thaw out the ground.

In the South—Ventilate the hotbeds and cold frames in which seeds of early crops are sown. Sow tomatoes, eggplants and peppers in frames.

Get the garden ready as soon as the ground can be worked.

Sow wrinkled peas, lettuce, radishes, early turnips, beets, spinach, onions and potatoes.

Set out asparagus and rhubarb roots.

MARCH

In the North—Make hotbeds and cold frames.

Sow tomatoes, eggplants, cauliflower, cabbage and pepper seeds in the hotbeds or in boxes in the house.

Plant radishes and lettuce in a hotbed and let them mature there.

Dress the asparagus beds with a good commercial fertilizer. A balanced fertilizer, or bonemeal alone, will serve.

If the ground is ready to work, plow and harrow, and sow seeds of early peas, spinach, radishes, beets, onion sets and lettuce.

Dig parsnips and salsify which have been left over winter in the ground before they begin to grow.

In the South—Plant the tall wrinkled peas and all of the other hardier vegetables. It is usually safe late in the month to sow string beans. Black Valentine is a particularly hardy variety.

Give plenty of air to the growing plants in the hotbeds and frames.

APRIL

In the North—Plant peas, spinach, beets, cabbages, carrots, lettuce, leeks, parsnips, Brussels sprouts, kohlrabi, parsley, potatoes, radishes, salsify, Swiss chard.

Start cucumbers, melons, lima beans and corn in cold frames to get extra early crops. It is best to use old strawberry baskets, inverted sods or paper pots.

Set out started plants of cabbage, cauliflower and leeks.

Cabbage, cauliflower and celery seed sown outside will give late summer and fall crops.

Harden off all plants that are to be set out from cold frames, hotbeds or boxes indoors.

In the South—All the garden vegetables may be planted in any part of the South early this month.

Tomato plants and all the other tender vegetables started under glass may be set out.

Keep on sowing beans, beets, carrots, kohlrabi, lettuce and radishes for successive crops.

Tomatoes started outside now will mature a crop before cold weather.

Sweet potatoes may be started in frames in any part of the South.

Plant okra.

MAY

In the North—Sow all the tender vegetables like cucumbers, melons, squashes, lima beans and tomatoes in the open ground.

Start planting corn and continue every ten days for a succession.

Transplant celery at least once to keep the taproot short.

Sow beans, peas, carrots, lettuce, radishes and kohlrabi for a succession. Broccoli, Brussels sprouts and leeks may be planted now.

Set out tomato plants, eggplants and pepper plants by the end of the month.

Cultivate all crops as soon as up to keep down weeds.

Start thinning the early-planted crops as soon as possible.

Pull the flower stalks from the rhubarb clumps. The plants are weakened by making blossoms.

Dandelions sown now will make good greens next spring.

In the South—Keep on sowing beans, corn, beets and similar vegetables for successive crops.

Celery seed for a late crop may be sown in the open ground.

Eggplants and peppers remaining in the frames should be set out before the end of the month.

Constant cultivation must be given to keep the soil from drying out.

Place protectors over melons, cucumbers and squashes to head off the striped beetle and flea beetle, or else dust these crops with tobacco dust as soon as they are up.

Set out started sweet-potato plants late in the month.

JUNE

In the North—Keep on planting sweet corn, bush beans, beets, carrots and kohlrabi.

Sow a long row of late beets for winter use.

Make a liberal sowing of rutabaga turnips to be stored for winter.

Squashes, pumpkins and melons may be started more safely this month than last month.

Set out celery plants, first thoroughly soaking the ground.

There is still time to set out tomato plants.

Watch for cutworms and dig them out if evidences of their work are found.

Stop cutting asparagus by the end of the month.

In the South—Sow parsnips and vegetable oysters this month. They do much better here when sown late than when planted early, as they must be in the North.

Keep on planting beans, corn and the like to continue through the season.

Cucumbers planted this month will provide pickles for fall.

Plant beets, carrots and rutabaga turnips for winter storing.

Set out late-started sweet potatoes.

JULY

In the North—Plant corn for the last time the middle of the month.

Keep on sowing radishes, turnips, bush beans, kohlrabi and early beets.

Cabbage may be set out to follow early crops.

Bury the joints of the squash vines at intervals to give protection from borers.

Use dusting sulphur or Bordeaux mixture to protect melons, squashes, beans and tomatoes from mildew or rust.

Dust or spray potatoes with a combination of arsenate of lead and Bordeaux mixture.

In the South—Tomatoes are subject to sun-scald in the Southern States. This is prevented by picking them as soon as they begin to turn color and ripening them in a shady place.

Seed of late cabbage may be planted late in the month.

Rutabagas sown this month will give a crop to store for winter.

Irish potatoes may still be planted.

Keep up a succession of bush beans, corn, beets and carrots.

Scotch kale planted now will give a good early winter crop.

Use hellebore on the cabbages to save them from the worms.

Mulch tomatoes, eggplants and peppers.

AUGUST

In the North—If tomatoes are slow in ripening, place them on straw in the cold frame with the sash in place.

Lettuce will grow best in a cold frame without glass.

Crimson clover sown in the corn at the last cultivation will add humus to the ground if turned in next spring. Crimson clover is not hardy enough for the more northern States, where it is better to use rye.

Very early beets may still be sown, also kohlrabi and radishes.

As soon as the onion tops begin to ripen, the crop should be harvested. Pull the onions and let them lie on the ground for two or three days until well cured. Then place in a well ventilated room where they can be spread out thinly and drying continued.

Keep up the use of arsenate of lead and Bordeaux, especially on potatoes.

In the South—Peas planted now will yield a good fall crop.

Sow seed of lettuce, Brussels sprouts, early turnips, sweet corn, string beans and winter radish.

Late cabbage plants may still be set out.

SEPTEMBER

In the North—Lettuce sown in cold frames will give a late fall crop.

Dig the potatoes as soon as the tops have died, especially if the season is a wet one.

If cabbage heads begin to crack, bend them so as to break the roots on one side.

Bank celery, but be careful not to get earth into the heart.

A top dressing of old manure may be used on the asparagus bed, being plowed under in the spring.

In the South—Plant late turnips and winter radishes.

Lettuce seed may still be sown.

Plant onion sets and potato onions.

Sow spinach and parsley for spring.

OCTOBER

In the North—This is a good time to divide and re-plant the rhubarb roots.

Finish digging the potatoes. When storing them for winter dust a little powdered sulphur over them.

Blanch endive by tying the leaves together.

In the South—Spinach and onion sets may still be planted, also Strap-Leaf turnips.

Many of the directions for harvesting and storing crops given for Northern growers hold good in the South.

NOVEMBER

In the North—All the root crops except parsnips and salsify should be dug early this month if this work has not been done before.

Celery should be kept blanched until late in the month, and perhaps covered with straw on cold nights. Before Thanksgiving it should be dug and stored in a dark corner of the cellar or in a pit for winter.

Witloof chicory, asparagus and rhubarb to be forced for winter should be dug before the ground freezes.

Brussels sprouts can be brought into the cellar to mature.

Give the rhubarb a liberal mulching of manure to be dug in when spring comes.

Clean up the garden and burn the stalks and vines which are likely to harbor insect pests.

If the garden is level it is an excellent plan to have it plowed in the fall.

In the South—Cabbage and lettuce plants for spring

use may be set out. Set the cabbage plants rather deep. It is a common plan to space the cabbage plants from fourteen to eighteen inches apart, with lettuce plants between them.

Make a last sowing of spinach in the extreme South.

In most of the South beets, carrots and leeks, as well as parsnips and salsify, may be left in the ground until needed.

Dig sweet potatoes when the tops are killed.

DECEMBER

In the North—Cover the strawberries and spinach with a light mulch if that work has not already been done. It is always best to wait until the ground freezes.

Clean up all rubbish.

Repair and paint tools, plant-boxes and the wheelbarrow.

In the South—Rake up all the leaves possible and cover them with manure to rot. They will make the best of fertilizer.

Ventilate hotbeds carefully.

Get your manure and compost ready for new hotbeds.

APPENDIX



Fertilizers in Small Gardens

AMATEUR garden-makers are often puzzled as to the amount of fertilizer needed for their small plots, because the usual directions give only the amount per acre. The following table shows (approximately) the proper proportions:

100 lb. per acre equals 1 lb. for a plot 10x43 ft.
200 lb. per acre equals 1 lb. for a plot 10x21 ft.
300 lb. per acre equals 1 lb. for a plot 10x14 ft.
400 lb. per acre equals 1 lb. for a plot 10x11 ft.
500 lb. per acre equals 1 lb. for a plot 10x 9 ft.

Vegetables for a Succession

Some gardeners make a mistake in sowing the different vegetables only once or twice. Many kinds may be planted until midsummer or later, giving a long season, even in the North, as the following table shows:

Bush beans	up to Aug. 1
Beets	up to Aug. 1
Carrots	up to Aug. 1
Corn	up to July 1
Lettuce	up to Aug. 15
Turnips	up to Aug. 15

Peas do not thrive in hot weather, but a sowing for fall use may be made the first of August. Radishes may be planted at ten-day intervals until the middle of September. Spinach for summer use may be sown from April to August. Early in September seed may be sown for a spring crop, the beds being covered with hay or straw through the winter. Corn salad may be handled the same way and gathered at any time in winter when the weather is warm enough.

Germination of Seeds

<i>Kind</i>	<i>Usual Time of Germinating, in days</i>	<i>Average Longevity, in years</i>
Beans	7-9	3
Beets	8-10	6
Cabbage family	7-9	5
Carrots	12-15	4
Cauliflower	7-9	5
Celery	10-15	8
Corn	5-8	10
Cucumbers	8-10	10
Endive	8-10	10
Lettuce	6-8	5
Onion	8-10	2
Pea	7-8	3
Parsnips	12-18	2
Radishes	5-6	5
Tomatoes	8-10	4
Turnips	5-7	5

Note.—It is important to remember that the weather and the condition of the soil greatly affect germination. Also that it is not always safe to rely on old seed, although, theoretically, it is good for several years.

How Much to Plant

For the average family—six people—the following quantities will be about right:

Beets	100 ft. of rows
Carrots	100 ft. of rows
String beans	100 ft. of rows
Lima beans	100 ft. of rows
Tomatoes	24 plants
Eggplant	12 plants
Peppers	12 plants
Cucumbers	6 hills

How Much to Plant—Concluded

Melons	6 hills
Summer squash or marrows.....	8 hills
Late squash	12 hills
Early corn	30 hills or 100 ft. of rows
Late corn	50 hills

Spray Mixtures for Small Gardens

<i>Spray</i>	<i>Ingredients</i>	<i>Quantity</i>
Bordeaux mixture...	Quicklime	1½ tablespoons
	Bluestone	1 tablespoon
	Water	4 qts.
Kerosene emulsion...	Kerosene	1 pt.
	Water	½ pt.
	Hard soap	1 cubic in.
Arsenate of lead.....	Lead arsenate paste..	1 tablespoon
	Water or Bordeaux mixture	1 gal.
Paris green	Paris green	1 teaspoon
	Water or Bordeaux mixture	3 gal.
Lime sulphur (home boiled)	Fresh stone lime....	20 lb.
	Sulphur (flowers) ..	15 lb.*

* Slack the lime in 15 gal. boiling water. While slacking add 15 lb. sulphur made into paste. Boil one hour and dilute to 40 gal. Strain before applying.

Note—The table on page 178 gives a classified list of insect pests and directions for their extermination. Gardeners desiring additional information may apply direct to the Bureau of Entomology, U. S. Department of Agriculture, although it should be understood that there is no publication covering the entire subject.

Planting Table for Vegetables

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Kind of Vegetable	Seeds or Plants Required for 100 Feet of Row	Distance for Plants to Stand—		Depth of Planting	Time for Planting in Open Ground		Ready for Use After Planting
		Rows Apart—Hand Cultivation	Plants Apart in Rows		South	North	
Artichoke, globe. " Jer. (tubers).	1 ounce. 2 qts.	2-3 ft. 1-2 ft.	2-3 ft. 1-2 ft.	1-2 in. 2-3 in.	Spring. Spring.	Spring. Spring.	15 months. 6 to 8 months.
Asparagus, seed.	1 ounce.	1-2 ft.	3-5 in.	1-2 in.	Autumn or early spring.	Early spring.	3 to 4 years.
Asparagus, plants.	60-80.	12-24 in.	15-20 in.	3-5 in.	Autumn or early spring.	Early spring.	1 to 3 years.
Beans, bush.	1 pint.	18-24 in.	5 or 8 to ft.	1-2 in.	February to April. [August to September.]†	April to July.	40 to 65 days.
Beans, pole.	1 pint.	3-4 ft.	3-4 ft.	1-2 in.	Late spring.	May and June.	50 to 80 days.
Beets.	2 ounces.	12-18 in.	5 or 6 to ft.	1-2 in.	February to April. [August to September.]	April to August.	60 to 80 days.
Brussels sprouts.	1 ounce.	24-30 in.	16-24 in.	1 in.	January to July.	May and June.	90 to 120 days.
Cabbage, early.	1 ounce.	24-30 in.	12-18 in.	1 in.	October to December.	March and April. (Start in hotbed during February.)	90 to 130 days.
Cabbage, late.	1 ounce.	24-36 in.	16-24 in.	1 in.	June and July.	May and June.	90 to 130 days.
Cardoon.	1 ounce.	2 ft.	12-18 in.	1-2 in.	Early spring.	April and May.	5 to 6 months.
Carrot.	1 ounce.	18-24 in.	6 or 7 to ft.	1 in.	March and April. [September.]	April to June.	75 to 110 days.
Cauliflower.	1 ounce.	24-30 in.	14-18 in.	1 in.	January and February. [June.]	April to June. (Start in hotbed during February or March.)	100 to 130 days.
Celeriac.	1 ounce.	18-24 in.	4 or 5 to ft.	1 in.	Late spring.	May and June. (Start in cold frame during April.)	100 to 150 days.
Celery.	1 ounce.	18-36 in.	4-8 in.	1 in.	August to October.	May and June. (Start in hotbed or cold frame during March or April.)	120 to 150 days.
Chervil.	1 ounce.	18-24 in.	3 or 4 to ft.	1 in.	Autumn.	Autumn.	1 year.
Chicory.	1 ounce.	18-24 in.	4 or 5 to ft.	1 in.	March and April.	May and June.	5 to 6 months.
Citron.	1 ounce.	8-10 ft.	8-10 ft.	1-2 in.	March and April.	May and June.	100 to 130 days.
Collards.	1 ounce.	24-30 in.	14-18 in.	1 in.	May and June.	Late spring.	100 to 120 days.

Corn salad	2 ounces	12-18 in.	5 or 6 ft.	$\frac{1}{2}$ -1 in.	January and February. [September and October.]	March to September	60 days.
Corn, sweet	$\frac{1}{2}$ pint	30-36 in.	30-36 in.	1-2 in.	February to April	May to July	60 to 100 days.
Cress, upland	ounce	12-18 in.	4 or 5 to ft.	$\frac{1}{2}$ -1 in.	January and February. [Autumn.]	March to May. [September.]	30 to 40 days.
Cress, water	$\frac{1}{2}$ ounce	4-6 ft.	4-6 ft.	Surface	Early spring	April to September	60 to 70 days.
Cucumber	$\frac{1}{2}$ ounce	18-24 in.	8-12 in.	1-2 in.	February and March. [September.]	April to July	60 to 80 days.
Dandelion	ounce	24-30 in.	18-24 in.	$\frac{1}{2}$ in.	Early spring or autumn	Early spring	6 to 12 months.
Eggplant	ounce	18-24 in.	18-24 in.	$\frac{1}{2}$ -1 in.	February to April	April and May. (Start in hotbed during March.)	100 to 140 days.
Endive	1 ounce	18 in.	8-12 in.	$\frac{1}{2}$ -1 in.	February to April	April. [July.]	90 to 180 days.
Horse radish	70 roots	24-30 in.	14-20 in.	3-4 in.	Early spring	Early spring	1 to 2 years.
Kale, or borecole	$\frac{1}{2}$ ounce	18-24 in.	18-24 in.	$\frac{1}{2}$ in.	October to February	August and September. [March and April.]	90 to 120 days.
Kohlrabi	ounce	18-24 in.	4-8 in.	$\frac{1}{2}$ in.	September to March	March to May	60 to 80 days.
Leek	ounce	14-20 in.	4-8 in.	1 in.	May to September	March to May	120 to 180 days.
Lettuce	ounce	12-18 in.	4-6 in.	$\frac{1}{2}$ in.	September to March	March to September	60 to 90 days.
Melon, muskmelon	ounce	6-8 ft.	Hills 6 ft.	1-2 in.	February to April	April to June. (Start early plants in hotbed during March.)	120 to 150 days.
Melon, watermelon	1 ounce	8-12 ft.	Hills 10 ft.	1-2 in.	March to May	May and June	100 to 200 days.
Mustard	$\frac{1}{2}$ ounce	12-18 in.	4 or 5 to ft.	$\frac{1}{2}$ in.	Autumn or early spring	March to May [September.]	60 to 90 days.
New Zealand spinach	1 ounce	24-36 in.	12-18 in.	1-2 in.	Early spring	Early spring	60 to 100 days.
Okra, or gumbo	2 ounces	3-4 ft.	24-30 in.	1-2 in.	February to April	May and June	90 to 100 days.
Onion, seed	1 ounce	12-18 in.	4 or 5 to ft.	$\frac{1}{2}$ -1 in.	October to March	April and May	130 to 150 days.
Onion, sets	1 quart	12-18 in.	4 or 5 to ft.	1-2 in.	Early spring	Autumn and February to May.	90 to 120 days.
Parsley	$\frac{1}{2}$ ounce	12-18 in.	3-6 in.	$\frac{1}{2}$ in.	September to May	September and early spring.	90 to 120 days.
Parsnip	$\frac{1}{2}$ ounce	18-24 in.	5 or 6 to ft.	$\frac{1}{2}$ -1 in.	September to April	April and May	125 to 160 days.
Peas	1 to 2 pks.	30-36 in.	15 to ft.	2-3 in.	September to April	March to June	40 to 80 days.
Pepper	$\frac{1}{2}$ ounce	18-24 in.	15-18 in.	$\frac{1}{2}$ in.	Early spring	May and June. (Start early plants in hotbed during March.)	100 to 140 days.
Physalis	$\frac{1}{2}$ ounce	18-24 in.	18-24 in.	$\frac{1}{2}$ in.	March to May	May and June	130 to 160 days.
Potato, Irish	5 lbs.	24-36 in.	14-18 in.	4 in.	January to April	March to June	80 to 140 days.
Potato, sweet	3 lbs.	3-5 ft.	14 in.	3 in.	April and May	May and June. (Start plants in hotbed during April.)	140 to 160 days.

Planting Table for Vegetables—Concluded

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Kind of Vegetable	Seeds or Plants Required for 100 Feet of Row	Distance for Plants to Stand—		Depth of Planting	Time for Planting in Open Ground		Ready for Use After Planting
		Rows Apart—Hand Cultivation	Plants Apart in Rows		South	North	
Pumpkin.....	$\frac{1}{2}$ ounce.....	8-12 ft.....	Hills 8-12 ft.	1-2 in.....	April and May.....	May to July.....	100 to 140 days.
Radish.....	$\frac{1}{2}$ ounce.....	12-18 in.....	8 to 12 to ft.	$\frac{1}{2}$ -1 in.....	September to April.....	March to September.....	20 to 40 days.
Rhubarb, seed.....	$\frac{1}{2}$ ounce.....	30-36 in.....	6-8 in.....	$\frac{1}{2}$ -1 in.....	.....	Early spring.....	2 to 4 years
Rhubarb, plants.....	33 plants.....	3-5 ft.....	3 ft.....	2-3 in.....	.....	Autumn or early spring.....	1 to 3 years
Rutabaga.....	$\frac{1}{2}$ ounce.....	18-24 in.....	6-8 in.....	$\frac{1}{2}$ -1 in.....	August and September.....	May and June.....	60 to 80 days.
Salsify.....	$\frac{1}{2}$ ounce.....	18-24 in.....	2-4 in.....	$\frac{1}{2}$ -1 in.....	.....	Early spring.....	120 to 180 days
Spinach.....	1 ounce.....	12-18 in.....	7 or 8 to ft.	1-2 in.....	September to February.....	September or very early spring.....	30 to 60 days.
Squash, bush.....	$\frac{1}{2}$ ounce.....	3-4 ft.....	Hills 3-4 ft.	1-2 in.....	Spring.....	April to June.....	60 to 80 days.
Squash, late.....	$\frac{1}{2}$ ounce.....	7-10 ft.....	Hills 7-9 ft.	1-2 in.....	Spring.....	April to June.....	120 to 160 days.
Tomato.....	$\frac{1}{2}$ ounce.....	3-4 ft.....	3 ft.....	$\frac{1}{2}$ -1 in.....	December to March.....	May and June. (Start early plants in hotbed during February and March.)	100 to 140 days.
Turnip.....	$\frac{1}{2}$ ounce.....	18-24 in.....	6 or 7 to ft.	$\frac{1}{2}$ -1 in.....	August to October.....	April. (July.).....	60 to 80 days.
Vegetable marrow.....	$\frac{1}{2}$ ounce.....	8-12 ft.....	Hills 8-9 ft.	1-2 in.....	Spring.....	April to June.....	110 to 140 days.

† Brackets indicate that a late or second crop may be planted the same season.

—From Farmers' Bulletin 818.

Principal Insects and Remedies

Insect.	Plants attacked.	Treatment.
Eating type:		
Tomato worms.....	Tomato.....	Hand-pick or spray with arsenate of lead.
Cabbage worm.....	Cabbage group.....	Hand-pick or apply arsenate of lead.
Cucumber beetles.....	Cucumber.....	Cover with frames. Apply tobacco dust or spray with Bordeaux mixture or arsenate of lead.
Cutworms.....	Tomato, cabbage, onion.....	Apply poison bait; place tin or paper collars around plants; hand-pick; apply Paris green or arsenate of lead.
Potato beetle.....	Potato, eggplant, and tomato.....	Hand-pick and apply arsenate of lead.
Sucking type:		
Squash bug.....	Squash, pumpkin, melons, etc.....	Hand-pick; spray with kerosene emulsion or nicotine sulphate.
Aphides (plant lice).....	Cabbage group and other plants.....	Spray with kerosene emulsion, a solution of hard soap, or nicotine sulphate.

Planting Table for Flowers

Allow 10 days for each 100 miles south or north of New York. Indoor planting is for seeds started in the house, in hot-bed or cold frame, the latter being available after March 1st in many sections. Weather may vary dates.

Name	Plant Indoors	Plant Outdoors	Dist. Apart (In.)	Blooms	Comment
Achillea (Sneezewort).....	March.....	June-Oct.....	12	July-Oct.....	A perennial, two feet high.
Ageratum.....	.....	May.....	6	June-Oct.....	Annual, grown from seeds or cuttings.
Alysum (Annual).....	.....	May-June.....	4	June-Oct.....	Excellent annual for borders.
Alysum (Perennial).....	.....	June-Sept.....	6	July-Oct.....	Used for edgings and rock work.
Aquilegia (Columbine).....	.....	June-Sept.....	8	June-Sept.....	Hardy perennial. Blooms the second year.
Asters (China).....	March-April.....	June 15-Sept.....	9	July-Oct.....	Bedding annual. Use wood ashes when setting plants.
Balsam.....	.....	May.....	9	July-Sept.....	Annual, to grow in clumps in the sun.
Calendula (Pot marigold).....	.....	May-June.....	6	June-Oct.....	Easily grown annuals, that self-sow. Fill vacant spots with them.
Calliopsis.....	.....	May.....	6	July-Oct.....	Showy annuals, good for cutting. Easy to grow, but they like the sun.
Campanula (Canterbury Bells).....	.....	June-Aug.....	12	June-Aug.....	Perennial, blooming the second year.
Celosia (Cockcomb).....	April.....	May.....	6	June-Oct.....	Annual. Combs may be dried for winter bouquets.
Candytuft.....	.....	May 15.....	4	June-Oct.....	Annuals, for beds, borders to cut. Make successive sowings.
Centaurea (Corn flower).....	.....	April.....	6	June-Oct.....	Annual, to grow in masses. Self-sown. Keep flowers picked.
Chrysanthemum (Annual).....	April.....	May.....	6	July-Oct.....	Annuals, for massing at a distance.
Cobea.....	March.....	.....	8	July-Oct.....	Climbing vine. Plant seeds edgewise.
Cosmos (Early).....	April.....	May.....	12	July-Sept.....	Tender annuals. Pinch back to make bushy plants.
Cosmos (Late).....	March-May.....	May.....	12	Sept-Oct.....	Tie to stakes if exposed to winds.
Dahlia.....	March-April.....	June.....	36	Aug-Oct.....	Late-started plants give largest flowers.
Delphinium (Larkspur).....	.....	June-Aug.....	12	July-Oct.....	Fine fall perennials. Bloom the second year. Blues are best.
Dianthus (Pinks).....	March-May.....	May.....	6	July-Oct.....	Perennial, blooming the first year.
Digitalis (Foxglove).....	.....	July-Aug.....	9	July-Aug.....	Fine in hardy border. Bloom the second year.
Eschscholtzia (California poppy).....	.....	May.....	4	July-Aug.....	Do not transplant. Foliage is pretty.
Gaillardia.....	April.....	May.....	6	July-Sept.....	Showy perennial, for beds.
Gourds.....	March-April.....	May.....	4	Sept-Oct.....	Excellent to hide unsightly objects.
Four O'Clocks.....	April.....	May.....	8	July-Sept.....	Annuals, for borders or beds.
Gypsophila.....	April.....	May.....	10	July-Sept.....	Fine to use in bouquets. Grow elegant.
Helianthus (Sunflower).....	April.....	May.....	12	July-Oct.....	Make a good screen. Try the new kinds.

Planting Table for Flowers—Concluded (180)

Allow 10 days for each 100 miles south or north of New York. Indoor planting is for seeds started in the house, in hot-bed or cold-frame, the latter being available after March 1st in many sections. Weather may vary dates.

Name	Plant Indoors	Plant Outdoors	Dist. Apart (In.)	Blooms	Comment
Hollyhock.....	March-April..	June 15-July..	15	Aug.-Sept.	Perennial. Spray with Bordeaux.
Kochia.....	March-April..	April.....	12	June-Sept.	The foliage turns red in the fall.
Larkspur (Annual).....	April.....	May-June.....	6	June-Sept.	Grow in masses. Flowers good for cutting.
Lobelia.....	April.....	May.....	4	June-Sept.	Lobelia Erinus is very popular for low edgings. It is blue. Use manure water for Lobelias.
Marigold.....	April.....	May.....	6	July-Oct.	Showy, easily-grown annuals.
Mignonette.....	March-April..	May.....	6	July-Oct.	Flowers very fragrant. Make successive sowings. Like cool soil.
Myosotis (Forget-me-not).....	March-April..	May.....	6	June-Aug.	Perennial, but blooms the first season. Likes shade and moist soil.
Nasturtium.....	.....	May.....	6	June-Oct.	One of the best annuals.
Nicotiana.....	April.....	May.....	9	July-Aug.	Tall, fragrant annuals, opening toward evening.
Pansy.....	March-May..	April-Oct.	4	April-Oct.	Give a rich, cool, moist soil and keep the blossoms picked.
Petunia.....	Feb-April..	May.....	6	June-Oct.	One of the most free-flowering annuals. Don't neglect watering.
Phlox (Annual).....	March-April..	May.....	8	July-Oct.	One of the best low annuals.
Poppy (Annual).....	.....	April.....	4	June-Sept.	Very attractive. Do not transplant. Make successive sowings.
Poppy (Perennial).....	.....	June-Sept.	9	June-Aug.	Fine to give bright colors.
Portulacca.....	.....	May-July..	4	July-Oct.	Unexcelled for dry, sandy and sunny spots. Close at night.
Pyrethrum.....	.....	June-Sept.	12	July-Aug.	Grow in masses. Good to cut.
Ricinus (Castor oil plant).....	April.....	May.....	36	No bloom.....	Very ornamental annual. Best started in the house in pots.
Salpiglossis.....	April.....	May.....	6	July-Oct.	Good mid-summer annual and easy to grow.
Salvia.....	Feb-March..	May.....	18	Aug.-Oct.	Give a green background and rich, sandy soil.
Scabiosa.....	April.....	May.....	9	July-Sept.	Long-flowering annual.
Stocks.....	Feb-April..	June-Oct.	12	June-Oct.	Good for beds and to cut.
Sweet Pea.....	.....	March-April..	3	July-Sept.	Plant early in rich, moist soil, in the open. Later, mulch the roots.
Verbena.....	Feb-April..	May.....	6	June-Oct.	Splendid annual for bedding in the sun.
Zinnia.....	March-April..	May.....	6	June-Oct.	Good summer plant for beds, and very easy to grow.

Good Varieties for the Home Garden

It often happens that garden-makers are puzzled as to the best varieties for them to grow. In the following list will be found tested and proved varieties of the most common garden crops:

<i>Name</i>	<i>Best Varieties</i>
Asparagus	Reading Giant Argenteuil
Beans (bush string).....	Stringless Green Pod Six Weeks Brittle Wax Fordhook Wax
Beans (bush shell).....	Dwarf Horticultural Red Kidney
Beans (pole)	Horticultural Kentucky Wonder Kentucky Wonder Wax
Beans (lima bush).....	Fordhook Bush Seiva
Beans (lima pole).....	Giant Potted
Beets	Eclipse Detroit Dark Red
Brussels sprouts	Case Dwarf
Cabbage (early)	Copenhagen Market Early Flat Dutch
Cabbage (late)	Succession Savoy
Carrots	French Forcing Chantenay Danvers Half Long
Cauliflower	Dwarf Erfurt

Good Varieties for the Home Garden—Continued

Celery	Paris Golden Giant Pascal
Corn	Golden Bantam Stowell's Evergreen
Cucumbers	Davis Perfect Japanese Climbing
Eggplant	Black Beauty
Endive	White Curled
Kale	Curly Scotch
Kohlrabi	White Vienna Purple Vienna
Leek	American Flag
Lettuce	Grand Rapids Wayahead May King Mammoth White (Cos)
Muskmelon	Jenny Lind Honeydew, Montreal
Onions	Danvers Yellow Globe Silver King
Onions (sets)	Yellow sets
Parsley	Moss Curled
Parsnips	Student Hollow Crown
Peas	Little Marvel Gradus Nott's Excelsior Thomas Laxton Telephone
Peppers	Ruby King Golden Queen, Chili

Good Varieties for the Home Garden—Concluded

Potatoes (Irish)	Irish Cobbler Gold Coin Green Mountain
Pumpkins	Sugar Winter Luxury, Chirimen
Radish	French Breakfast Scarlet Globe White Icicle
Rhubarb (roots)	Linnæus
Salsify (oyster plant).....	Mammoth Sandwich Island
Spinach	Round Thick-Leaved
Squash (summer)	Giant Crookneck.
Squash (winter)	Delicious Hubbard Fordhook
Swiss chard	Lucullus
Tomato	Bonny Best Dwarf Champion Matchless Baer Stone
Turnip	White Egg White Milan Rutabaga
Watermelon	Cole's Early Tom Watson Dixie Sweetheart

Agricultural Experiment Stations

All who are interested in gardening will find it greatly to their advantage to keep in close touch with the near-

est experiment stations. The various stations are located in the places named below:

Alabama—Auburn, Uniontown and Tuskegee	Montana—Bozeman
Alaska—Sitka	Nebraska—Lincoln
Arizona—Tucson	Nevada—Reno
Arkansas—Fayetteville	New Hampshire—Durham
California—Berkeley	New Jersey—New Brunswick
Colorado—Fort Collins	New Mexico—Mesilla Park
Connecticut—Storrs and New Haven	New York—Geneva and Ithaca
Delaware—Newark	North Carolina—Raleigh
Florida—Lake City	North Dakota—Agricultural College
Georgia—Experiment	Ohio—Wooster
Hawaii—Honolulu	Oklahoma—Stillwater
Idaho—Moscow	Oregon—Corvallis
Illinois—Urbana	Pennsylvania—State College
Indiana—Lafayette	Porto Rico—Mayaguez
Iowa—Ames	Rhode Island—Kingston
Kansas—Manhattan	South Carolina—Clemson Col- lege
Kentucky—Lexington	South Dakota—Brookings
Louisiana—Baton Rouge, New Orleans and Calhoun	Tennessee—Knoxville
Maine—Orono	Texas—College Station
Maryland—College Park	Utah—Logan
Massachusetts—Amherst	Vermont—Burlington
Michigan—Agricultural Col- lege	Virginia—Blacksburg
Missouri—Columbia and Mountain Grove	Washington—Pullman
	West Virginia—Morgantown
	Wisconsin—Madison
	Wyoming—Laramie

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